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ANTARCTIC  
ADVENTURE



# ANTARCTIC ADVENTURE

SCOTT'S NORTHERN PARTY

BY

RAYMOND E. PRIESTLEY

WITH A MAP  
AND 150 ILLUSTRATIONS

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## DEDICATION

To

MY COMRADES AND FRIENDS

COMMANDER V. L. A. CAMPBELL, R.N.

SURGEON G. MURRAY LEVICK, R.N.

PETTY OFFICER G. P. ABBOTT, R.N.

PETTY OFFICER F. V. BROWNING, R.N.

PETTY OFFICER H. DICKASON, R.N.

THIS BOOK IS DEDICATED, IN THE HOPE THAT THEY

WILL CONSIDER IT A FAIR RECORD OF OUR

TWO YEARS' WORK AND

EXPERIENCES

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1737

## PREFACE

THE majority of the photographs reproduced in this book were taken by Dr. Levick, who was the official photographer to the Northern Party. The author is much indebted to him for permission to use these, and also for the poems from the *Aurora Australis*, and for his account of the blizzard of March 17 and 18, 1912, when the tent which sheltered his party was blown away. Other photographs are by the author, and by Mr. Debenham, to whom also the author's gratitude is due.

For the permission which alone has enabled this account of our adventures to be published, thanks are due to Lady Scott and to her publishers, Messrs. Smith, Elder & Co., to whom also the author owes all those illustrations which have already appeared in the official history of Scott's Last Expedition. The plans and sections in the text were drawn by Mr. Debenham from the author's rough sketches ; while the sketch of the interior of the snow cave has been worked up by Lady Scott from a rough drawing by Commander Campbell. Finally, the book could not have been undertaken were it not for the permission and encouragement of Com-

mander Evans and my own leader, Commander Campbell, and for the cordial relations existing between the author and the other five members of the Northern Party, relations which it is hoped this narrative may cement rather than estrange.



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## INTRODUCTION

ROUND the South Pole lies a continent which is comparable in size with any other of the great land-masses of the globe, and a considerable proportion of which lies between 6,000 and 10,000 feet above sea-level. It is towards the exploration of this continent that some of the principal of the efforts of modern geographers have been directed. Two portions of it are already approximately well known, and it is with the adventures of a small party of men who were endeavouring to add a chapter to this great geographical work that the present book deals.

To the layman who does not think in degrees of latitude and longitude, it will be difficult to visualize the relative positions of the outlying portions of a continent which occupies such a central position with regard to the Pole, and which is so nearly round as is Antarctica, but I would suggest that the task will be much easier if he considers the situation of the Antarctic lands with reference to the better-known land-masses which lie immediately to the north of them. This method has also the advantage that the position of any particular portion of the continent is then always indicated by the point of departure of the expeditions which explore it. Thus the expeditions which have sailed to explore West Antarctica have made their base in South America, and those which have left to examine East Antarctica (in which lies the Victoria Land region with which this

book deals) have made either Australia, Tasmania, or New Zealand their last port of call.

Victoria Land, therefore, which has been the principal object of the English exploration in the far south, is spoken of as belonging to the " Australasian Sector " of the Antarctic.

On the 25th of September, 1839, two small sailing ships, the *Erebus* and *Terror*, sailed down the Thames on their way south on a voyage of exploration, which was to rank with the world-famous voyages of that greatest of British navigators, Captain Cook. In command of the expedition was Captain James Clark Ross, already well known for his discovery of the North Magnetic Pole, and his instructions, to locate and, if possible, to reach the South Magnetic Pole, led to the discovery of Victoria Land, and as a later consequence to the present recrudescence of Polar exploration.

In January, 1841, after a voyage full of interest and valuable scientific work, the *Erebus* and *Terror* were stopped when within two or three hundred miles of the Magnetic Pole by a mountain range which reached to heights of 12,000 feet in places, and which Ross named the Admiralty Range, after the patrons of the expedition. This mountainous coast forced the ships to alter their course, and for the next few days they sailed along it in a southerly direction until on January 27th, to the surprise of every one on board, they sighted immediately ahead of them a " mountain twelve thousand four hundred feet of elevation above the level of the sea, emitting flame and smoke in great profusion."

The island of which this great and symmetrical volcanic cone was part proved to be an effectual bar to further progress southward, and as the coast now turned east, Ross was obliged to give up any hope of reaching either the Magnetic or the Geographical South Pole.

The island which thus limited their voyage was afterwards named Ross Island, the active volcano and an





THE ZOOLOGIST AT WORK.



SURVEYING THE BARRIER EDGE FROM THE *TERRA NOVA*.





extinct companion were called Mts. Erebus and Terror, after the two ships, and the comparatively ice-free sea in which the ships had made such good progress was named the Ross Sea. All these names will often recur in the course of the narrative of our own adventures in 1910-1913.

Leaving Mt. Erebus on his right, Ross then continued his cruise to the eastward, and he now sailed for upwards of four hundred miles along a perpendicular ice face, which prevented him from making much southing and which continued as far east as the pack would allow him to reach, and as much farther as he could see. This ice wall he named, very appropriately from his point of view, the Great Ice Barrier, and of it he said in his book : " It is impossible to conceive a more solid-looking mass of ice ; not the smallest appearance of any rent or fissure could we discover throughout its whole extent, and the intensely bright sky behind it but too plainly indicated the great distance to which it reached to the southward."

In this cruise Ross reached the high southern latitude of  $77^{\circ} 46'$ , a great advance on any previous Antarctic record, and one which was to remain unbroken for another fifty years. Indeed, this record was not broken until the possession of auxiliary steam inaugurated a new era of exploration and, to a certain extent, made ships independent of the vagaries of the pack, and thus enabled them to venture in close to the land for periods long enough to allow them to land enough men and equipment to form shore parties.

Ross's later exploration, important as it was, does not immediately concern us, for the scene of the work of the present expedition was confined to the regions already mentioned. The next voyage which bears on the history of Victoria Land was the unsuccessful venture of a Norwegian whaler, commanded by Captain Kristensen. On January 16, 1895, Cape Adare, at the northern end

of Victoria Land, was sighted on this voyage, and two more days brought the *Antarctic* to Possession Island some three degrees farther south, and a landing was effected on the same spot where, fifty-five years earlier, Ross had hoisted the British flag and taken possession of the neighbouring coast.

Among the crew of the *Antarctic* was a young Australian of Norwegian birth, Carstens Borchgrevink by name, who had been so fired by the desire for Antarctic adventure that he had signed on as a member of the crew. An adventurer with large ideas, Borchgrevink on his return sketched out plans for a private venture of his own, and after a lapse of some years succeeded in interesting Sir George Newnes in his project. The latter accordingly financed the new expedition, and in 1899 Borchgrevink and a party of men were landed at Cape Adare, and while their ship, the *Southern Cross*, returned to Australia, the shore party initiated a new phase of exploration by wintering successfully on the Antarctic mainland. Cape Adare, however, which was chosen as a landing-place through the accident of Borchgrevink's having touched there before, proved a very poor centre for sledging operations ; the country all round, as can be seen from our own narrative, proved to be very impenetrable, and the work of the expedition was, therefore, very much restricted. Nevertheless Borchgrevink did good pioneer work in opening up a new field of exploration, and in the opinion of those of us who have followed in his footsteps, he has not received his fair share of credit for his achievements. The first winter on the Antarctic continent was no mean undertaking, and a leader who successfully carried the majority of his party through such an experience must have possessed some, at least, of the qualities of leadership.

In the following summer the *Southern Cross*, after relieving the shore party, continued her course to the





THE *FRAM* AT THE BAY OF WHALES.



THE ROSS BARRIER CLIFFS.

southward, and a landing and short sledge journey were made on the Barrier, thus beating Ross's record by a very little.

Now that the possibility of living for a year or more on the Antarctic Continent had been demonstrated, and sledging methods of advance had been tried with success, the way was opened for a much quicker advance towards the south, a great impetus was given to exploration, and Ross's dreaded "Barrier" was destined to become the "Highway to the South."

In 1901 three great expeditions left Europe simultaneously in pursuance of an international scheme of scientific work in the Antarctic, and once again the English expedition, this time under the command of the late Captain R. F. Scott, chose the Victoria Land region for the scene of their endeavours. The expedition, in their preliminary summer cruise, resurveyed the Barrier face, and, owing to peculiarly happy ice conditions, they were able to penetrate beyond its eastern limit, discovering a land of low relief, which Captain Scott named after King Edward. All the time that they were sailing along the coast the ship was beset by pack and enveloped in fog, and no very definite survey was made, and it was in consequence of this, and the failure of the Shackleton Expedition to reach the same point, that one of the objectives of the expedition of 1910-13 was the exploration of King Edward's Land.

After this successful cruise the *Discovery* went into winter quarters in a bay at the south-western extremity of Ross Island, and here she was frozen in for two years. From this base sledge journeys of considerable extent were made during two seasons, and the principal journeys achieved were to the south, when Scott, Shackleton, and Wilson reached  $82^{\circ} 17'$  S. latitude, thus extending the southern record by some two hundred miles, and the journey to the west in the succeeding year, when Scott, Lashly, and Evans penetrated into the

interior of the continent for a distance of nearly three hundred miles.

The next attempt to reach the South Pole was initiated by Sir Ernest Shackleton, who had accompanied Captain Scott on his last southern march, and it was on this expedition that the author served his apprenticeship. The *Nimrod* left New Zealand on January 1, 1908, and was only in Antarctic waters for fifteen months, but in that time an almost incredible amount of work was achieved. During the single sledging season the available men were divided into three units, one with four ponies making an attack on the Pole, another party of three men making for the South Magnetic Pole, and the third, of which I was a member, making a geological reconnaissance in the neighbourhood of the Ferrar Glacier.

The Southern Party, consisting of Shackleton, Marshall, Adams, and Wild, passed Scott's farthest south after twenty-five days' marching, and though unexpectedly delayed by the intervention of a range of mountains across their route, they succeeded in reaching within 97 geographical miles of the Pole, having advanced six more degrees of latitude (360 miles) towards their objective. This was a splendid record, and that they did all that was possible under the circumstances is attested by the fact that the party were marching for forty-eight hours without food before they picked up their lower depôt on the great Beardmore Glacier. Had weather conditions been more unfavourable, the disaster of 1912 must have been anticipated, but nothing is more striking about the Shackleton Expedition than the uniform good fortune which accompanied it. The Southern Party arrived back exhausted at the beginning of March to find the *Nimrod* awaiting them with the news that their glorious failure had been paralleled by an equally great success on the part of Professor David's Magnetic Pole Party. These latter had left



Cape Royds, the headquarters of the expedition at Ross Island, on October 6th, had crossed McMurdo Sound, and laid a depôt at Butter Point, and had marched from there for 200 miles along the coast. They had then struck inland at a place where they calculated would give them the most direct path to their objective, and scaling the coast range by means of a small outlet glacier from the inland ice, they had reached the plateau and had marched across it to the Pole. When the fact that they had no means of transport beyond man-hauled sledges is considered, it will be seen that this feat still stands unbeaten among modern geographical exploits.

Their return journey, like that of the Southern Party, was handicapped by short rations, while their clothing was inadequate to face the plateau temperatures, but they arrived at the coast safely, though several days overdue, and the *Nimrod* picked them up before they had been waiting many hours.

Since his return from his last expedition, Captain Scott had always intended to make his way back to the Antarctic and endeavour to complete the work he had so well begun in 1901, and his plans were completed in 1910, when his second expedition, or as it is better known, "Scott's Last Expedition," left England. Our leader was, before everything, a scientist, and it is to this fact that the Northern Party owes its existence as a separate entity; for although from the first he made no secret of the fact that the conquest of the South Pole was to be his main object, yet he intended to make his expedition as efficient as possible for scientific purposes, and for that two bases were essential. Thus in December 1910 we see the *Terra Nova*, with sixty souls on board, making her way through the ice-pack at the entrance to the Ross Sea, on the newest, and up to the present the greatest, Antarctic adventure. The traverse of the pack zone, which was unusually

heavy where we attempted to force a passage, took some three or four weeks, so that it was not until January 4, 1911, that we entered the open sea beyond. The ship's course was then shaped for Cape Crozier, the north-east point of Ross Island, but a heavy swell prevented any hope of an easy landing here, and after a reconnaissance of the coast in one of our whaleboats, the *Terra Nova* resumed her voyage, and we steamed slowly along the coast of Ross Island, surveying as we went. The next point where a convenient winter station might be erected was Cape Royds, the headquarters of the Shackleton Expedition, but when we rounded this point and steamed farther into McMurdo Sound we saw that the season was an unusually open one and that the ice had broken back farther than we expected. This enabled us to reach another point of land: a blunt peninsula, which was named by Captain Scott after Commander Evans, the second in command of the Expedition. A party therefore landed here, and as it appeared to be fairly sheltered and to have a convenient site for the hut and station, the landing of stores was at once commenced, the sea ice which remained in the bay acting as a natural pier alongside which the *Terra Nova* lay, and over which the stores were carried by sledges. The incidents of the landing belong more to the story of the main party, and thus my own account of the story of the Northern Party begins a little later with the departure of the Southern Dépôt Party.

This short account embodies the history of the Victoria Land or Australasian Sector of the Antarctic from its first discovery up to the date with which the present volume deals, and should have made clear to any readers who have not followed the story of the previous expeditions the position of the place-names mentioned in the narrative and the events with which they are associated in our minds.







MOUNT TERROR.



EVERY MAN HIS NEIGHBOUR'S BARBER.

# ANTARCTIC ADVENTURE

## CHAPTER I

### THE FIRST PARTING

Good-bye to the Dépôt Party—Description of parting—Classical scenery—The Call of the South—Dogs and ponies eager for a start—The Northern Party ; plans and men.

ON the 26th of January, 1911, a little group of men stood together on the sea ice south of a tongue of ice which juts out from the slopes of Erebus like a huge and natural pier, a fitting monument to the power of the frost which is the ruling force in the Antarctic.

Six, at any rate, of those who are alive to-day are destined to have that scene engraved on their memories for the remainder of their lives, for it was there that we of the Northern Party said farewell to our companions who were to make the final successful attack on the South Pole ; and though no forebodings disturbed the serenity of the parting, it was ordained that we should never set eyes again on five of the men whom we were proud to number among our friends.

The *Terra Nova* had reached the shores of Ross Island in safety after a voyage of varying fortune. Here we had helped to establish the main party in comfortable winter quarters, and in what we had reason to believe was an advantageous position for communication with the snow plain over which they would have to travel for the first three hundred miles of their march to the Pole. Their stores had been landed with the loss

of only one motor-sledge, and now the first march in the campaign towards the Pole was about to be commenced.

The men who were to form the Southern Dépôt Party were all keen to commence their work, and both ponies and dogs were in as good condition as could be expected after their long time on board ship. Every one, in fact, was quietly confident—the sledge party that they would give a good account of themselves, and those of us whose work lay elsewhere that our companions, with any ordinary fortune, would reach the goal.

The day had been declared a holiday, and all the ship's party who could be spared had filed out to bid the wayfarers God-speed. It was certainly the nearest thing to a crowd that has ever been seen in Victoria Land, or that will be seen there for many a long day. The day itself was perfect, for the weather was beautifully clear, with just enough of a cool breeze to remind us of where we were, and thus keep our minds on the business in hand.

This portion of the Antarctic bids fair to become classical ground, for here within twenty miles lie the bases from which the three great English expeditions have departed on their attempts—the first two unsuccessful and the last successful—to plant the Union Jack on the most southerly point of the globe. At the entrance to the Sound lies Cape Royds, the headquarters of the Shackleton Expedition of 1907-9; seven miles farther to the south lies our own base, where the majority of those present were to spend the next year; and, finally, less than a day's march to the south of Cape Evans lies Hut Point, where Captain Scott's first expedition had erected a hut to shelter their sledge parties should anything compel the *Discovery* to leave her anchorage.

Eastward, from all three of the black patches of exposed rock on which the winter quarters are situated, the slopes of Erebus swell gradually upwards, con-

verging until, some ten miles distant and some 5,000 feet above sea-level, they rise suddenly in the huge cone which crowns the mountain, and which, lying as it does on the borders of a continent swathed in ice, is the grandest tribute to the power of fire one can conceivably imagine.

From the active crater snugly ensconced within the breached summit of the cone a delicate, feathery trail of smoke swept away to the north and west. This cone, with its ice-clad slopes, where the glaciers descend unbroken over the smoother contours, or tumble in a confusion of seracs as precipitous ice-falls over the greater convexities of the surface, reaches a height of 13,000 feet, and is in itself sufficient to arrest the eye ; yet its beauty is rivalled on every hand.

As the eye roams to the southward and westward, it rests first on the long, black-and-red basalt promontory of Hut Point. To those of us who knew the place, it was easy to imagine the solitary wooden cross erected on the point, testifying mutely to one life already given to wrest the secrets from the regions beyond, and so soon to be companioned by a greater cross marking the loss, not of one but of five men who were well content to die for an idea. Beyond we could see the islands which were embedded in the Barrier, that frozen highway to the South, while still farther to the west rose the beautifully symmetrical, conical peak of Mt. Discovery, towering to a height of 10,000 feet. Behind this, again, mountains stretch away in either direction, peak after peak, forming the mighty ranges which, on the one hand, seemed to point to us who were to follow their coast much farther to the north, and, on the other hand, beckoned to those who journeyed southward, pointing out the way to the Pole ; though we knew from Shackleton's pioneer work that it was these very mountains which, some hundreds of miles to the south, swung right across the route and presented an almost insuperable barrier to the Pole-seekers.

Those who have gazed on such a scene as this can, in a measure, understand "the Call of the South," but perhaps an even greater lure than the splendour of the land is to be sought for in the relations which exist between the little band of officers and men who compose an expedition. There is no place where discipline is more truly in evidence than in an Antarctic expedition, and yet here, more than anywhere else, officer and man are on a common footing, and the qualities which make for success are to be looked for as much in one as in the other. Men make closer friends in the Antarctic than elsewhere, and thus there is always the longing to return to a place where a man stood or fell by his own merits, and where we have known a comradeship that seemed to have no breaking strain.

The scene of the start was indeed a lively one. Here was a dog-sledge ready for the signal, while the dogs barked and barked again, and, in their impatience, showed a marked tendency to pass the time by joining issue in one glorious scrap. Well away from the disturbing influence of the dogs stands the line of pony-sledges, with the animals taking life much more easily, while their leaders stand by their heads, each surrounded by his own circle of well-wishers. Captain Scott himself is saying good-bye to Campbell, the leader of the Northern Party, and giving him parting advice, discussing with him the prospect of securing good winter quarters.

Near by, the largest group of all, seated on or standing by a laden sledge, centres about the most popular member of the expedition, Dr. Wilson, or "Uncle Bill," as he is more familiarly called—a man who had won the hearts of the ship's company during the few short months we had known him to an extent that few would have dreamed possible, and whose loss has left for all of us a gap which will not easily be filled.

The time given for leave-taking soon passes, and we





Abbott.

Dickason.

Browning.



Priestley.

Campbell.

Lewick.

GROUP OF THE NORTHERN PARTY AT CAPE ADARE.



stand cheering, hat in hand, while the cavalcade files off southward across the sea ice, while in the hearts of all of us must ring, as they do still in mine, the words of our leader as he wished each of us good fortune and thanked us for what we had done already towards making the expedition a success.

The parting was now an accomplished fact, and the first permanent division had taken place in our little company. It now remained for us to make our way back to the ship and prepare for the three other separations, which were finally to leave the six men who constituted the Northern Party to their own devices for twenty months, with the single exception of four days spent on board the ship at the beginning of January 1912.

It is the wanderings and adventures of the Northern Party with which this book is chiefly concerned, and this will therefore be a fitting place to introduce my companions and myself. Captain Scott had early decided that, while the attack on the South Pole was admittedly the main object of the expedition, yet other geographical exploration should not in any way be neglected. The main result of this decision was the formation of a separate party under Lieutenant Campbell, who were to act independently of the Southern Party. Campbell had with him two officers and three men, and the party was provided with a hut and stores for two years.

The personnel of the party was therefore as follows :—

Commander V. L. A. Campbell, R.N., in command.

Surgeon G. Murray Levick, R.N., surgeon, zoologist, and photographer.

R. E. Priestley, geologist and meteorologist.

Petty Officer G. P. Abbott, R.N.

Petty Officer F. V. Browning, R.N.

Seaman H. Dickason, R.N.

## CHAPTER II

### OUR CRUISE IN SEARCH OF A HOME

Résumé of previous work—Watering ship—Glacier Tongue—Landing of the Western Party—Butter Point—Digression about dépôts—Landing at Cape Evans and Cape Royds—Boarded by Adélie penguins—Cruise along the Barrier—Calving of bergs—Failure to reach King Edward's Land—We meet Amundsen—Our impressions of the Norwegians—Dogs—Return to Cape Evans—Swimming the ponies ashore—Start for Cape Adare—Seven days' gale—Cape Adare.

DURING the days which preceded the departure of the Southern Dépôt Party all hands had been busy erecting the hut for the main party at Cape Evans, landing their stores, and preparing the winter quarters in every way possible, so that it should be self-supporting for one, two, or even more years if the ship was unable to return to it within that time.

All our attention had been concentrated on this work for a matter of three weeks, and it had been thoroughly and, as the event proved, adequately carried out. It now only remained for the *Terra Nova* to find winter quarters for ourselves, and then she was at liberty to leave the Antarctic and seek a safe berth in New Zealand for the winter, during which she would be able to refit and reprovision in readiness for the next season's work.

The evening of the 26th was spent by all hands "watering ship." The natural ice-pier I have already mentioned is the floating extension of one of the most



SUMMER AT CAPE EVANS.



NO LIMITS TO THEIR IMPUDENCE.



active glaciers which descend from the middle slopes of Mt. Erebus. Most of the border of Ross Island is fringed at or near sea-level with the terminal ice-cliff of such glaciers ; but this particular one, being unusually well-nourished, has pushed its seaward end out into the water faster than the waves have been able to undermine and remove it, and so we have one of the floating tongues of ice which are peculiar to the Antarctic and which are known to us as glacier tongues, and of which this particular jetty is the type and name-giver.

Glacier Tongue, therefore, consisting as it did of fresh ice, was obviously the best place from which the *Terra Nova's* water-tanks could be filled, and its suitability was doubled by the fact that its cliff is comparatively low and almost flush with the ship's rail.

The *Terra Nova* had already been anchored alongside the Tongue in order to facilitate the landing of the sledges and stores for the depôt party, and when we returned from bidding the latter farewell a broad gangway was run out, a few picks and shovels were thrown on to the ice, and the work of watering ship was begun. While one party of men picked and shovelled out the ice into large zinc baths, or broke out large pieces which could be slid on board down the gangway, another party took the ice from the ship's side and dropped it into the tanks alongside the engines. Here it was melted down and from here the water was drawn off and carried to the forward tanks. Another party, meanwhile, was sledging to a safe place a large quantity of fodder and dog-biscuits we were leaving as a depôt here, but both works proceeded quickly, and early on the morning of January 27th we left Glacier Tongue for the last time. In the autumn of the same year, indeed, this ice-tongue, which had been to all appearance unchanged since 1901, lost three or four miles of its length, the end of it breaking off as a huge iceberg and floating off to strand later along the west coast. Here it was found by Captain



Scott and a sledge party in the following September, but when we sledged down the coast in 1912 it had disappeared.

The first objective of the *Terra Nova* on this new cruise was the landing of a geological party, under the command of Griffith Taylor, as near as possible to the Ferrar Glacier on the west side of McMurdo Sound, and in a few hours we anchored alongside the sea ice which still occupied the bay at the entrance of the glacier. Here a party of seamen started away under Levick to slay some seals which were lying on the ice, and meanwhile Campbell, Debenham, and myself climbed the face of the piedmont glacier which fronts the foothills to the south of the Ferrar to examine the old depôt we had left there in the course of the Shackleton Expedition. The latter was intact and was easily recognized at some distance by the bamboo and the shredded and bleached tatters which were all that the blizzards had left of our black depôt flag.

Butter Point, as this piedmont has been named by Captain Scott, is also by way of becoming historical. It is the first point of call for all parties making for the Ferrar Glacier or the plateau to which it gives access. In 1902 and 1903 both Armitage and Scott passed this point on their way to the western highway, and the first depôt left on its sloping surface was the tin of butter from which the ice cape derived its name, and in which it was intended to cook the seal meat which would be the first change from sledging diet the party would taste for some months. In the Shackleton Expedition a few years later the Magnetic Pole Party under David left here their first depôt, which contained all the odds and ends they found it possible to do without on their way up the coast. Two months later the Western Party, of which I was a member, arrived here, and found a letter from the Professor which, taken with instructions from the commander, compelled them to spend





THE WESTERN HIGHWAY.



many weary days off this ice cape, and it was here that we were caught napping on the sea ice and carried off to sea for twenty-four hours. When we heliographed the *Nimrod* and were taken off by her, we left here any spare provisions and clothes we had, on the chance that they might be of use to the Professor's party, and it was this dépôt that we now revisited.

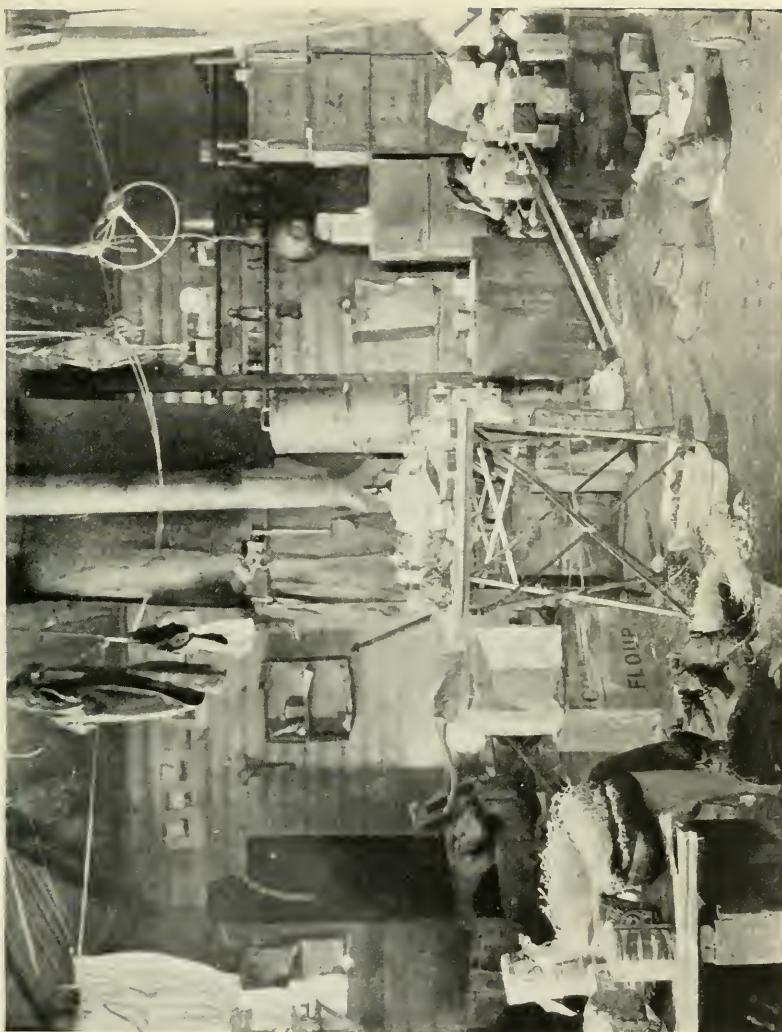
The provisions proved to be in good condition, and we left the majority of these for the benefit of Taylor's party, who were to make this a port of call on their homeward journey. I did, however, carry away some of my clothes, and a couple of years later I was to be very glad for that addition to my outfit. The sailors also broached a tin of cigarettes which had been left here as a treat for Mackay, who was an inveterate smoker, and these cigarettes were divided amongst the crew as souvenirs.

Before we had finished examining the dépôt, the cases of food which we were to leave here for the Western Party arrived from the ship, and after he had seen where we proposed to place them Debenham said good-bye and went off to join his own party. The rest of us planted and secured the dépôt, marked it with a new black flag, and then returned to the ship ourselves, but by the time we arrived the sledge party was already several hundred yards away and going strong in the direction of the glacier valley. As I gazed up the long vista of that magnificent trough, which stretches as straight as a Roman road for thirty miles between cliffs several thousand feet in height, I wondered what was in store for them there and could almost have found it in my heart to envy them their future. They were making straight for the heart of picturesque Antarctica, and it was there only a couple of years before that I had spent some six or seven weeks of summer sledging, both very pleasant and intensely interesting.

No time was lost after our return, but in a few

minutes the ice-anchors were on board and we had left on the next stage of our journey—the landing of Nelson and Ponting at Cape Evans. This also was carried out without a hitch, and after an interchange of cheers we once more steamed away, as most of us thought for the last time.

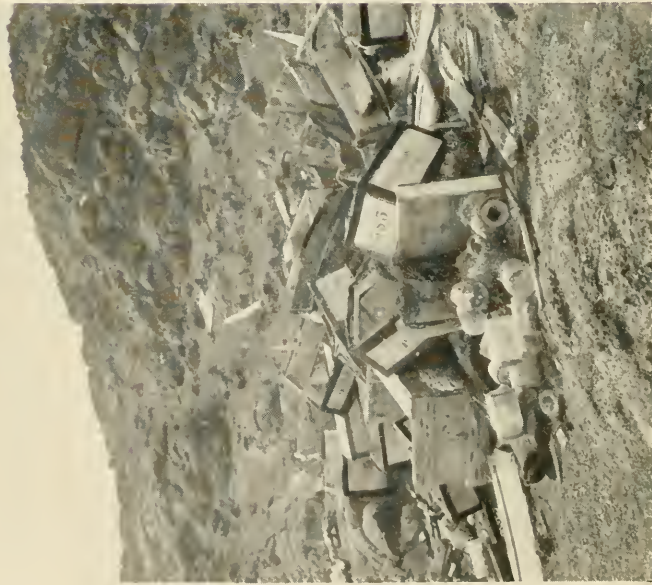
Our next port of call was Cape Royds, the Shackleton winter quarters, where Campbell, Levick, and myself had stayed for the third week in January, and where we had left a depôt of geological specimens which we had collected in the neighbourhood. An hour or so after leaving Cape Evans, therefore, the *Terra Nova* hove to off Flagstaff Point, the seaward edge of the peninsula; a boat was lowered, and Campbell took a party ashore. The landing was easily effected, as there was little swell in the cove at the Rookery and the specimens were easily embarked. The chief difficulty, however, which presented itself, was that of keeping the boat clear of the penguins. As we lay alongside the icefoot we effectively blocked all access to the Rookery, but this did not seem to deter the penguins in the least. They would rise out of the water a few yards off as usual, take a glance at the boat, which they doubtless took for a stranded floe, and then disappear. From previous experience I knew what was coming and looked with interest for the *dénouement*, but the boat-keeper who was helping me to get the specimens on board was new to the vagaries of the Adélie, and I should not like to say who was the most surprised, the sailor or the penguins, when the latter landed half a dozen at a time upright in the bottom of the boat. Certainly the penguins were most annoyed, and directly they found they were trapped they assaulted the poor man with unreasoning fury, so that it was quite difficult to secure them and pitch them back into the sea. It was on a somewhat similar occasion to this that an Adélie, seeing what he thought was a handy piece of



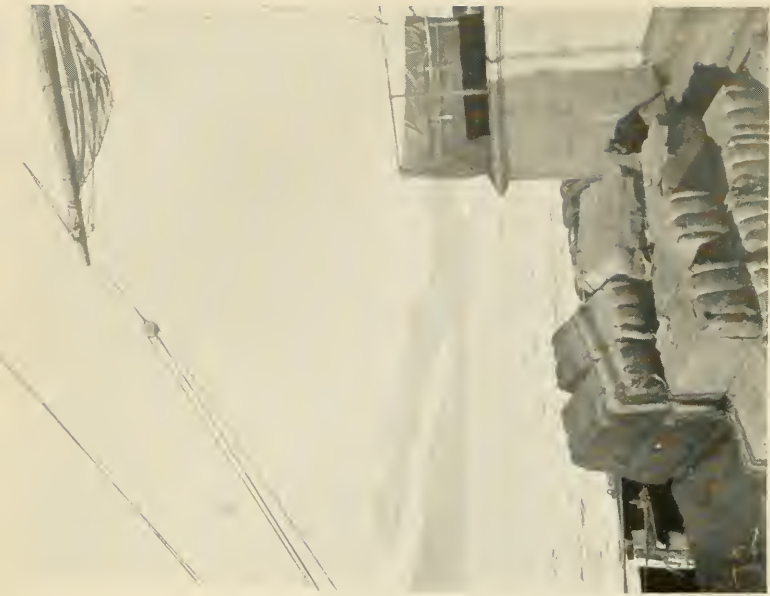
SHACKLETON'S HUT AT CAPE ROYDS.







RELICS OF PAST OCCUPATION,



FODDER FOR THE NORTHERN PARTY'S PONIES.



ice for a rest, leaped out of the water and landed on the knees of the boatswain who was in the stern. He looked the man in the face once, gave one hysterical squawk of horror, and leaped back over the gunwale into the sea. If only a snap could have been obtained of the incident, it would have been invaluable as a study of facial expression, for I have never seen any one's face show sheer stupefying astonishment better than that of our respected boatswain, unless it were the penguin's.

We caught and killed a few of these birds for present necessities, and also took one or two youngsters for their skins, and besides the rock specimens and the penguin carcasses we carried off with us the two bound volumes of the *Sketch* which the *Nimrod* had brought down in 1909. These proved, as we expected them to be, a great addition to our library, which was rather deficient in illustrated books.

An hour or so after the boat had been lowered saw us all on board again with our spoil, and then the ship's course was set for King Edward's Land, and the shores of Ross Island were gradually left behind, as most of us thought, for at least a year.

The next few days we cruised along the face of the Barrier, following the undulations of the ice-cliff, and remapping it to find out if its position had changed since last time it was surveyed by the officers of the *Nimrod*. The cruise was thoroughly enjoyed by everybody. The weather was quite respectable and the water fairly smooth, and though very few things happened to break the monotony, there was sufficient work to keep us all happy. As the numbers on board were much reduced there was much more room, and this acted in two ways. It made it possible for us to take more exercise, and so we did not lose the fitness gained by the hard sledging work at Cape Evans, and also we were able to have our meals in much greater comfort.

The wardroom of the *Terra Nova* will seat six a side very comfortably, but there was not much elbow-room when the whole expedition was on board and the number of officers who sat down to dinner was doubled. The spare room also enabled Campbell to have the more essential of our stores removed to more accessible positions. It was at this work that we were mainly kept occupied, with an occasional pull at a rope or a couple of hours' coal-trimming or work at the pumps as a variant.

The Barrier face seemed very little changed since I last saw it, but we had, even during three or four days, abundant proof that it is constantly undergoing adjustment. On several occasions small bergs calved when we were passing. The seaward edges of the ice are evidently being undermined by the water, and every now and then some portion gives way, falling into the sea with a roar like thunder, and throwing spray and brash ice for hundreds of yards.

We did not examine the face of the Barrier very closely for landing-places on our outward journey, for Campbell wished, if possible, to land on King Edward Land itself. This purpose was, however, frustrated; for, although we met unusually open sea around Cape Colbeck, the pack again closed round us just beyond that point, and up to the time when we were compelled to turn by heavy ice we saw no place on the ice-cliff which fringed the land where a landing would have been possible.

The term "land" for this portion of the King Edward Land coast is certainly misleading, for it at once conjures up pictures of bare rock slopes with the ice confined between them. All that was to be seen here was an even ice-slope, broken only here and there by crevassed areas, which rose to a height which might have been anything from 700 to 1,000 feet. The presence of land beneath the ice-dome was only to be







THE *FRAM*.

inferred from its height and from the crevasses, which suggested that it rested directly on a somewhat uneven surface.

The heavy pack to the east of Cape Colbeck caused Campbell and Pennell to decide that the risk of pushing on was too great when measured beside the results which might be obtained, and the *Terra Nova* therefore steamed back along the Barrier edge, a closer watch than before being kept for accessible portions.

In this way we made our way westward, and on the evening of February 3rd we steamed round the eastern headland of the Bay of Whales, and to our amazement saw another ship in the Bay. Our astonishment was quite legitimate, for ships are not so common in the Ross Sea that one should expect to come across them in this way, and I think that at that time no member of the ship's company had any idea that we had any rivals in this portion of the Antarctic, though most of us knew that Amundsen intended to try for the Pole.

We at once anchored to the ice within a short distance of the stranger, which many of us already recognized from Nansen's books or from personal knowledge as the *Fram*, the most famous of Polar ships. When we arrived there was no sign of life aboard of her, but soon a man appeared, and Campbell went aboard to interview him. He proved to be the watchman left in charge of the ship, and told us that Amundsen was already established in winter quarters here and might be expected at any minute at the ship. Soon afterwards the Norwegian explorers appeared, and Campbell, Pennell, and Levick were invited to breakfast with them next morning and to inspect Framheim.

This they did and were entertained most hospitably, and later in the day Amundsen, Nielsen, and another lieutenant, whose name none of us caught, came on board the *Terra Nova* to lunch.

After lunch any man who could be spared left with our guests to see over the *Fram*, while one or two of us were left on board to show members of the crew of the *Fram* over the *Terra Nova*. After this interchange of courtesies the *Terra Nova* loosed her anchors and we steamed slowly out of the bay, trawling as we went.

This rencontre had left us with much to think of and had definitely altered our plans. The impression left on my mind—and, indeed, I think, on the minds of all of us—by these men is best described by the following extract from my diary, written at the time:—

“Well! we have left the Norwegians and our thoughts are full, too full, of them at present. The impression they have left with me is that of a set of men of distinctive personality, hard, and evidently inured to hardship, good goers, and pleasant and good-humoured. All these qualities combine to make them dangerous rivals. . . . We have news which will make the Southern Party as uneasy as ourselves, and the world will watch with interest a race for the Pole next year, a race which may go any way, and may be decided by luck or by dogged energy and perseverance on either side. . . . If they get through the winter safely, they have unlimited dogs, the energy of a nation as Northern in type as we are ourselves, and experience of snow-travelling that could be beaten by no collection of men in the world. There remains the glacier. Can their dogs face it, and if so who will get there first?

“One thing I feel, and that is that our Southern Party will go far before they permit themselves to be beaten by any one, and I think that two parties are very likely to reach the Pole next year, but God only knows which will get there first.”

The principal trump-card of the Norwegians was undoubtedly their splendid dogs, and even then it was

quite clear to us that if they won the race they would owe it to a great extent to these animals. I think that no incident was so suggestive of the possibilities latent in these teams as the arrival of Amundsen at the side of the *Terra Nova*. His dogs were running well, and he did not check them until he was right alongside the ship. He then gave a whistle, and the whole team stopped as one dog. With a word of command he inverted the empty sledge and came on board, leaving the animals to themselves ; and there they remained until their master had finished his visit. They were all exceptionally strong-looking brutes and completely under control ; and when dogs are good they have no compeers as draught animals under Polar conditions.

As soon as we had left the bay a conference of officers was called in the wardroom, and Campbell and Pennell decided to return at once to Cape Evans and inform the Southern Party of Amundsen's arrival. This we accordingly did, and on the evening of the 8th we enlightened the party left at the hut.

When we had left on our attempt to reach King Edward's Land we had carried with us the two ponies which were allotted to us for use, and which would have been very valuable to us in our work in such a low, ice-covered land without sharp relief. It was very plain to us now, however, that these ponies would be little or no use farther to the north in Victoria Land where we now had to go, for here the mountains are precipitous, the glaciers fall steeply to the sea and bristle with inaccessible icefalls, and the sea ice along which we should have to travel was likely to be seamed with high belts of pressure which would be insuperable to these animals. On the level snowplain, which stretched south of Ross Island for several hundred miles, on the other hand, these ponies would be of great use to the Southern Party, and, therefore, Camp-

bell decided to land them here, and so if possible to further the plans of the Pole-seekers.

On arrival at Cape Evans we found that the sea ice which had formerly filled the bay and which had acted as a natural landing-stage had broken out. There was now no alternative between keeping the ponies or swimming them ashore, and as the temperature was still fairly high Campbell determined on trying the latter. A canvas sling was therefore prepared to fit under the bodies of the ponies, and the whaleboat was manned and lowered to tow them ashore. The first animal was then walked until it was immediately beneath the swinging-out tackle, and the canvas body-band was passed beneath its body. The two ends of the band were next hooked to the tackle, the ropes tautened, and the pony swung off the deck and out-board, protesting wildly with all four hoofs, but quite safe. Once the pony was clear of the rail the tackle was then lowered until the animal was submerged except its head, and, while the steersman in the whaleboat seized its head, another man slacked off the band, which was then hauled up ready to repeat the operation. The word was then given to the sailors in the boat to give way and the pony was dragged through the water towards the beach.

On arrival at the beach, Anton, the Russian boy in charge of the ponies, took charge, and after a run round and round a gravel patch till the poor beast was once more fairly warm, he was rubbed down until nearly dry, and was given half a bottle of brandy before being tethered in the lines. The first animal was too supine to do anything but allow himself to be dragged ashore, but the second beast, who was by way of being more spirited, though he gave more trouble before we got him off the deck, struck out manfully once he was in the water, and helped the crew of the whaler as much as he knew how.





LOWERING A PONY INTO THE WATER.

To face p. 42.





On the return of the party which had left the news for Captain Scott at Hut Point we at once left on another cruise in the endeavour to find a winter quarters for our own party, and this time we set our faces towards the north ; while if our efforts were not successful before our stock of coal gave out altogether we should have to accompany the ship back to New Zealand. We had already very little coal left, and when we had made less than two hundred miles north from Cape Evans, heavy weather rendered the situation even more critical. On the 12th a gale from the south sprang up, and in a few hours the ship was rolling heavily in a nasty sea ; and although hove-to under main lower topsail, we were driven gradually north as day followed day without the wind easing, until when the gale moderated sufficiently to enable us to make headway against it we found ourselves ninety-six miles north of Cape Adare. By this time the ship was very light and her movements uneasy in the extreme, so that for some of us physical suffering was added to our mental anxiety, and these four days were not at all pleasant.

On the 16th the gale moderated and we were able to make a little headway, and steamed in towards the coast, coming close to it about abreast of Smith's Inlet, some fifty miles north of the cape. We were unable to follow the coast closely any farther to the north because the pack here thickened and the swell from the gale hurled the pieces of ice with great violence against the sides of the ship so that there was some danger of stoving them in.

From Smith's Inlet, therefore, we steamed slowly south towards Robertson Bay, examining the coast for a good landing-place as we went, but without success. The cliffs dipped steeply to the sea from great heights, and even the glaciers fronted the sea everywhere with perpendicular walls, which at their

lowest points were 50 feet or more above sea-level. Without any change in type, the coast continued to the back of Robertson Bay, where a low portion of the Dugdale Glacier near Duke of York Island seemed to offer a possibility of landing. This was rejected after some thought, however, and we have reason to feel grateful that Campbell was not tempted to land here, for the particular piece of ice we had thought of as a site for our hut sailed gaily past our camp at Cape Adare a few months later on its way to more genial climes.

This continued ill-fortune finally reduced our alternatives to two, and Campbell placed these two before Levick and myself.

On the one hand was the certainty of landing at Cape Adare, with the disadvantage of having to put up with second-hand winter quarters, from which it was impossible to sledge overland in any direction; and, on the other hand, the possibility of getting into Wood Bay or landing near Coulman Island, with the certainty of returning to New Zealand should we fail to land in two or three days. Needless to say we voted for the first, and so our plans were eventually decided; and on February 18th, at three in the morning, the *Terra Nova* stood up towards the beach at Cape Adare, and our wanderings were over for the present.

The weather was perfect for landing, and on this day it was given to us to realize that, if the Southern Party were settled in the most classical spot in East Antarctica, we were certainly just about to settle in one of the most beautiful. Immediately at the back of the beach Cape Adare rose steeply to a height of 4,000 feet, while the black and red of the basalt of which it is composed contrasted sharply with the white of the snowdrifts which seamed its top and sides. Opposite to us rose the Admiralty Range, which vies



THE *TERRA NOVA*.



with and even surpasses in beauty the Royal Society Range opposite Mt. Erebus. In Mts. Sabine, Minto, and Adam the mountains towered to heights of 12,000 feet, and from between the snowclad peaks of the nearer mountains steep and much-crevassed glaciers fell precipitately to the sea.

A nearly full moon, far brighter than an English harvest moon, threw a golden track over the unruffled surface of the water to the north of us, and the mountains to the south were just tipped by the rays of the rising sun. It was calm and the air was beautifully clear.

Everywhere were signs that the place teemed with the types of life we were accustomed to look for in the more favoured regions of the Antarctic. A school of killer whales played round the ship, inquisitive skuas and giant petrels flew around us, an occasional snowy petrel darted gracefully by, and from the foreshore rose the unmistakable sounds of a rookery of Adélie penguins. It seemed as if our luck had turned at last.

## CHAPTER III

### LANDING AT CAPE ADARE AND SETTLING IN WINTER QUARTERS

Landing stores—Erecting the framework of the hut—Departure of the ship—Our first breeze—Work on the hut—Troubles of amateur carpenters—We are proud of our work—Staying the hut—Penguin guano routed by chlorine—The remedy worse than the disease—Making an icehouse—Butchering penguins—Fresh meat from New Zealand unnecessary—Encroachment of the sea.

As Pennell was very anxious to get away on his last cruise in search of new land to the northward, and as the time when fair weather could be relied on was fast passing, it was decided that our landing should be completed as quickly as possible.

The six of us who were to stay were therefore landed at once, and with us went Davies, the ship's carpenter. As soon as we reached the shore Abbott, Browning, and the carpenter commenced at once to dig the foundations for the hut. Meanwhile Campbell, Levick, and myself prepared to take the gear from the boats when these arrived, and Dickason started operations on an old stove which had been left in the partially dismantled hut of the Southern Cross Expedition.

On board the ship the crew worked watch and watch as usual, the one watch manning the boats and the other breaking out the cargo from the 'tweendecks and hold, and within half an hour of our first landing the stores began to come ashore.

The first boatloads consisted almost entirely of wood-

work for the hut, and as this was landed the hut party carried the essential parts to the site chosen, and the building proceeded with such speed that within a few hours those of us who were toiling away at the icefoot were cheered by the sight of the framework completely put together and already looking like the skeleton of a home. Indeed, so well did Davies and his amateur assistants work that the outside layer of matchboarding was finished before we knocked off work on the 19th, and we thus had the assurance that when the ship had gone we should be able to work on the interior of the hut with comparative comfort even should the wind be too boisterous for work out of doors.

The work of unloading the boats, however, was too arduous to allow us much time to admire the result of other people's labours.

The ship's party managed to keep two boats going all the time—one whaleboat and a lifeboat—and as these brought in from three-quarters of a ton to a ton each trip, we had our work cut out to get one unloaded before the next arrived. In fact, the first rest we secured was when the pack came in at about 2 p.m. on the 18th and the boats were unable to make their way to the shore. This respite just gave us time to remove the stores already landed beyond the reach of the swell, but by the time this was accomplished the ice was drifting out again on the ebb-tide, and by taking a somewhat circuitous route the boats were once more able to reach us. The last boatload arrived at about 11.30 p.m., but the stores were not all placed in safety until about 1.30 the next morning, by which time we were all ready for a well-earned rest.

It was certainly the most strenuous day's work which I had taken part in since the commencement of the expedition, for we had been hard at work since 3 a.m., and during the  $22\frac{1}{2}$  hours we had landed 30 tons of stores, and that under circumstances which were not



too favourable. Perhaps a bigger strain than the actual lifting of the cases was the necessity we were under of continually watching the boats. These were liable to broach to at any moment in spite of the utmost efforts of their crews, and would have put an end for all time to the working capacity of any man they might happen to catch between them and the ice-floes which lined the shore.

It was fortunate indeed that the weather was comparatively warm, for a strong swell was running when we arrived, and this did not decrease during the day, so that for most of the time those of us who were unloading the boats were working up to our waists in water. Even thigh boots were not an unmixed blessing, for the seas as often as not swept over the top of them and converted them after the first few minutes into miniature reservoirs of very chilly water. In fact, the only difference they seemed to make was that the water bathing our legs was not changed quite as often as that wetting the rest of our bodies.

In spite of the work, however, or perhaps because of it, we were all in the highest of spirits. Dickason, who, I believe, would create a respectable fire out of a block of ice, had Borchgrevink's old stove quite in hand by lunchtime, so that a plentiful supply of hot cocoa and hot meals of unlimited extent kept us all well up to sticking point, and offset in a great measure the effect of the ice-cold water on our bodies.

Our sleeping-bags had been, of course, the first things brought ashore by the boats, and after the day's work was over we all turned in in the partial shelter of the two huts.

Next morning work was commenced by 7.15, and as there was little stuff to come ashore a strong working party was landed from the ship, and with their help an almost incredible amount of work was carried through before the light failed us in the evening. In fact,





THE *TERRA NOVA* IN THE PACK.

before we were obliged to knock off, all the materials for the building of the hut had been carried up to within a few yards of the site, the provisions had been packed in neat depôts well back from the shore, and five tons of patent fuel had been brought ashore and ranged in caches along the icefoot, where we thought at that time that the waves would not reach them even in storms.

Owing to the presence of heavy pack in the bay the ship was unable to hold her position in the afternoon, and Pennell was obliged to steam to the westward. As night drew on and she did not return, the officers and men on shore wrapped themselves in any blankets or bags they could find and took what rest they might, while Heald and myself sat over the stove in Borchgrevink's hut and kept a look-out for the *Terra Nova*. About 4 a.m. she reappeared close to the beach, and in another half an hour the boat came in and took off the members of her company who remained. I did not actually see the parting as I was frantically searching for a length of stove-piping which had gone astray, but judging from the noise, it was a very cheerful one.

It would be impossible to say too much about the way every one had worked during the last two days. Our anxiety to get settled ashore was quite enough to account for the zeal we had ourselves shown, but we fully recognized the debt of gratitude we owed to the ship's company who had no such motive and who yet, from Pennell down, exerted themselves as much as they could possibly have done had their own comfort been in question.

It was with real regret that we saw the ship which had now been our home for several months disappear beneath the horizon, though the regret was certainly tempered by the feeling of relief that we were not disappearing with her in the direction of New Zealand.

The weather till now had been calm, but as we stood watching the ship out of sight we noticed a southerly

breeze springing up, and it was not without misgivings that we turned into our bunks to complete our broken sleep. Next morning, when we turned out very reluctantly after a short rest, we found our forebodings justified, for a moderate gale was blowing, and Campbell turned all hands out to pass some wire hawsers over the roof of the hut as temporary stays.

The gale continued all day, but the stays held, and fortunately the wind was not a very strong one, and though on one occasion I was blown off the roof of the porch, it was quite possible to work outside.

A moderate gale just at this time, moreover, was in one way a blessing, for it probed out our weak points while yet leaving us power to remedy them. Before the close of the day the hut was properly secured, all our movable gear was stowed in the lee of one or other of the buildings, and Campbell had fixed up a tarpaulin over the unroofed portion of Borchgrevink's hut to protect our sleeping-bags and clothes-bags.

In the meantime Dickason, who for the present had taken over the duties of cook, had made a clean sweep of the rubbish in the roofed hut and had converted it into a very snug living-room, and it was in this that we made our home until March 4th, when we were able to move into our own hut.

It was on the building of this latter that the energies of the party were concentrated during the next few days, and all things considered, the result of our efforts was very creditable.

With the exception of Abbott, who had tried his prentice hand on the hut at Cape Evans, we were completely without experience, and the type of hut we had with us was very complicated—too complicated, I think, and far too high for so small a party.

Most of us are quite capable of driving nails successfully under ordinary circumstances when we are in comfortable positions, and with proper carpenter's

hammers. I, for one, however, found that it is quite a different thing to drive a nail correctly when leaning back at an angle of 60 degrees from a ladder, with both hands occupied, one with the nail and the other with a geological hammer weighing two or three pounds, and with one leg on a step of the ladder and the other crooked between two other steps and wedged against one of the crossbeams of the framework of the hut for support. Even now I do not like to think of the mess I made of my portion of the building, and my hands bore the marks of mishits for two or three weeks, for my geological hammers are designed to cut and not to bruise. There was a good deal of truth in the remark that "the Northern Party had for the present turned themselves into a society for making S's out of iron nails."

One real defect of the hut was the impossibility of making the matchboarding fit over the layer of Gibson quilting (Hessian stuffed with seaweed), which we used as insulating material. This caused an endless amount of trouble, and the only way the difficulty could be overcome as a rule was by cutting away the greater portion of the tongues of the boards. The Gibson quilting proved, indeed, to be a perfect insulating material, but at the time we did not bless it. After one's knife had been used once or twice for cutting the quilting it was almost impossible to tell the back of the knife from the front, and then one assumed as innocent an expression as possible and went round to borrow some one else's. The success or failure which attended the attempt to borrow was then directly dependent on the amount of innocence of expression acquired and whether or not the owner of the knife had been cutting Gibson quilting himself. If he had he would lend his knife quite cheerfully, and come round to listen while you tried to use it.

In spite, however, of the difficulties attendant on lack



of experience, the work went steadily forward. We were fortunately favoured during the fortnight which followed the first blow with unusually fine weather for the time of the year, and by March 1st the hut was completed except for little details such as the setting up of the stove, the nailing down of the linoleum on the floor, etc.

We were proud of our work, and the sequel proved that we had reason to be. Although the hut did bulge a little in places where it should not have done, it stood some of the fiercest blows that it has ever been my lot to experience, and on no occasion did the damage it sustained exceed the removal of three or four pieces of weatherboarding from the weather side.

It was quite nice to walk round the hut after it was completed and be able to consider it as the work of our own hands. Such, too, is the vanity of amateur carpenters that when we did admit any doubt about its stability when it was creaking and groaning before the fury of the winter storms, it was noticeable that it was the framework we spoke of as being the weak spot, this having been erected and nailed together by a professional. It is true that when we looked at the house from one particular angle from which the bulge was particularly prominent we were compelled to smile, but before the end of the year we had almost convinced ourselves that we had put that bulge there on purpose as a decoration.

When we commenced work on the roof we had, of course, been obliged to unship the temporary stays, but when the outside work was finished we replaced them and doubled their strength. Three strong wire hawsers in all were passed over the roof, one lying athwart-ships and the other two running fore and aft. The thwart-ship wire was attached on one side to an anchor which had formerly been used by Borchgrevink to secure his own hut, and at the other end to a large barrel of



colza oil sunk into the ground and cemented down by freezing water into the gravel around it. This water froze quickly and formed a cement of exceeding toughness. The two fore and aft wires were then passed across, one on either side of the roof-tree, and were roped together tightly just beyond the roof, and these also were continued down to the ground and secured to anchors sunk in a cement of sand and water.

In addition to these wire stays a stout mast was wedged and chocked against the lee side of the hut, and the majority of our stores were built into a wall to windward of the house, leaving a passage two yards wide between the hut and the wall. This acted splendidly as a breakwind, and its efficiency was increased by roofing the space between the wall and the hut with a roof of planks sloping up towards the top of the hut, thus forming a very perfect penthouse which deflected a considerable portion of the wind upwards.

The space thus enclosed also made a splendid store-room, and enabled the cook and storekeeper to have ready access to the provisions even during the worst blizzards.

To any one unacquainted with the strength of the Antarctic winds, these precautions may seem superfluous, but we had already had considerable experience of their fury. We also had a grim warning in the unroofed condition of one of Borchgrevink's huts and in the accounts of the Southern Cross Expedition. I shall have to record from time to time during the next two years hurricanes whose force would hardly be credible were it not for the tangible evidence I can bring forward; and the fact that from time to time we were compelled to have fear for the stability of the hut in spite of all our care is proof enough of the necessity for the stays and buttresses.

During the erection of the hut only one unpleasant incident occurred. As a draught under the hut is fatal to any attempt at insulation, Campbell determined to

have a trench a few inches deep dug round it and to earth up the bottom boards of the walls with the material from this trench. It was very unpleasant work, for the soil consisted of basalt pebbles sprinkled through a paste of guano and decomposing penguin carcasses.

The combined smell from this and from the ground beneath the floor of the hut was too much for the workers, and before boarding up the floor Levick sprinkled the ground liberally with some bleaching powder which we had with us. The chlorine from this soon overpowered the more unpleasant smell from the soil, but the remedy proved in the long run to be worse than the disease.

The first inkling we had that anything was wrong was when all those who were working inside the hut developed bad coughs. Most of them recovered quite quickly from this cough and the sore throat which accompanied it ; but before the evening of the day when the effects of the chlorine were first noticed not only was Levick unable to speak, but his eyes were so swollen that he was unable to see, and it was a day or two before he finally shook off the effects of the gas.

Most of the strength of the party during the first fortnight was, as I have shown, employed in the building of the hut, but once the outside was completed one or two of us were able to turn our attention to other necessary tasks.

As the summer drew on and more and more snow was removed from the beach, it soon became evident that one of our greatest difficulties would be the preservation of our stock of fresh meat. I was told off by Campbell to attend to this, and the first icehouse I made was cut out in a large berg stranded on the ice-foot, and which was well above sea-level when we landed.

The rapid advance of the sea, however, soon breached this cave, and it was only at the expense of a very

thorough ducking in the sea that I managed to save the few penguins that I had put in it. It was plain then that the icefoot was not to be trusted, and there were no snowdrifts of any size within half a mile of the hut. The only way out of the difficulty was to make an artificial icehouse.

A number of cases left by the Southern Cross Expedition were then commandeered and emptied, and these were built into the form of a hollow square and filled with ice cut from the bergs and floes which lined the icefoot. These boxes were piled in three tiers until the walls of the square were five feet high, and then the outside of the icehouse was ready. Inside a layer of ice a few inches thick was spread on the gravel floor, and on this was laid the first instalment of our fresh meat. Another layer of the ice fragments was then spread over the meat, and as we killed more animals this process was repeated until our larder was filled.

It was necessary to keep a watch on the ice and replenish it from time to time during the next month, when the sun was still fairly high ; but when this was done the meat kept in excellent condition, and the first winter wind added to the efficiency of the ice-house by forming permanent snowdrifts against the lee and weather sides.

Having prepared the icehouse for its reception, it was next necessary to obtain an ample supply of fresh meat, for, a day or two after our arrival, Campbell and Levick had condemned our mutton, and it was all thrown into the sea and carried away by the tide. It was therefore all the more necessary that we should make sure of an ample supply of penguin meat before the severity of the autumn weather forced these animals to leave us. This meant that we must butcher several hundreds of these birds, and the slaughter proved, as usual, to be as unpleasant as it was necessary. It is very true that one of the essential qualities of an

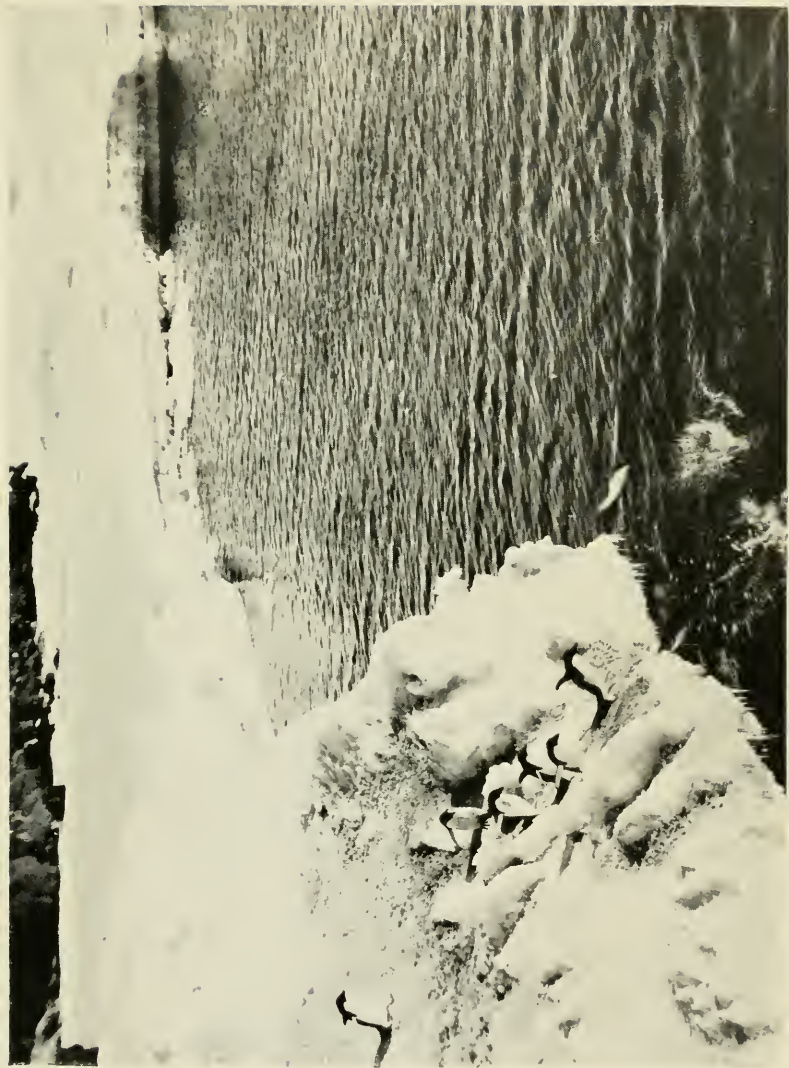
explorer is that he should be able to turn his hand to anything, but the only really distasteful duty we are called upon to do is this same butchery of Adélie penguins.

These unfortunate birds are so friendly that it seems a shame to kill them, while they are so tenacious of life that it is impossible to be certain of always killing them with a single blow. It was necessary, however, that we should have fresh meat for our health's sake, and in a few days several hundred birds were killed, cleaned, and stowed away in ice. We were not so fortunate in obtaining a supply of seal meat, as very few of these animals came up on the beach until the sea ice set in in the autumn, but we secured enough for our present requirements, and were able easily to make up the deficiency with a few extra penguins.

The result of this year's experience proved to all of us how unnecessary and even undesirable it is for an expedition to go to any great amount of trouble to bring down a large quantity of fresh meat from New Zealand. Penguin and seal have all the good qualities of mutton and beef, and the flavour of Adélie penguin is equal to that of most birds, while seal, although rather tasteless, is quite eatable.

I have already mentioned the encroachment of the sea on the icefoot which lined the southern shore of the foreland. During the first ten days after our landing the sea advanced as much as twenty yards in places. All our spare moments were occupied endeavouring to save our depôts along the shore from being removed by the swell, and in this we were only partially successful.

There were several articles of our equipment which different members of the party remembered seeing brought ashore and which were never seen again, and there is no doubt that their disappearance took place in this way. It was only in the first few days that we



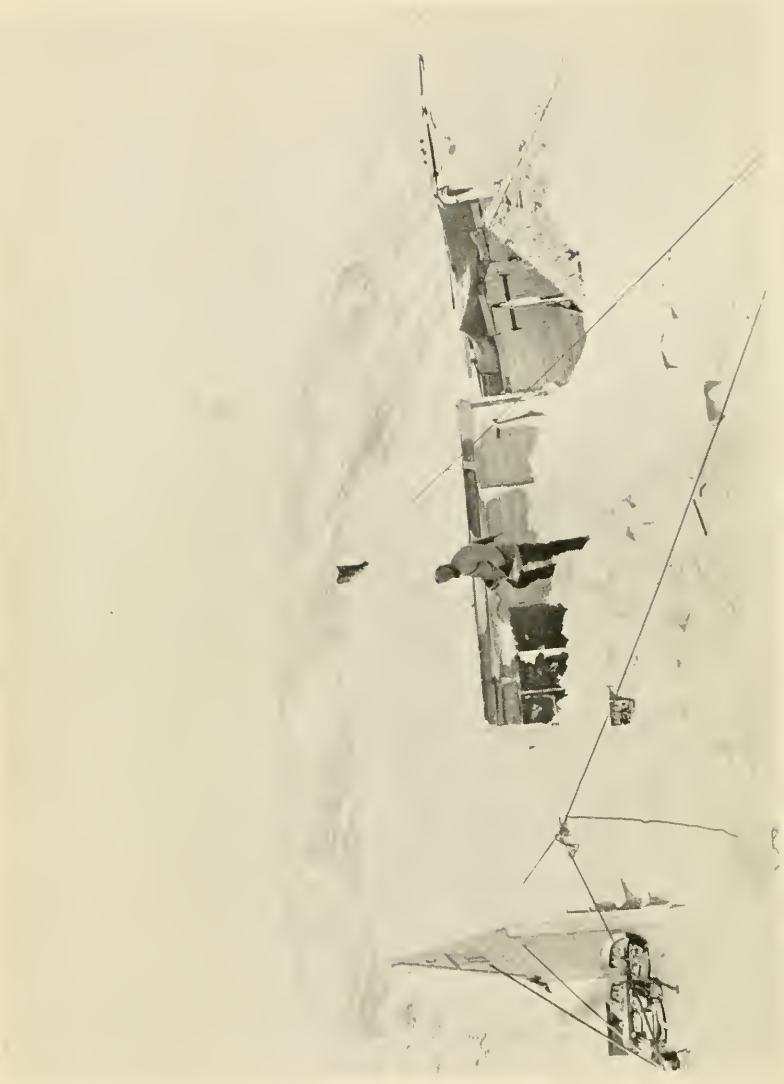
ADÉLIE PENGUINS OFF TO SEA.











BORCHGREVINK'S HUT AT CAPE ADARE.

sustained any serious losses, for we soon recognized the danger our stores were in ; but during this time we had to move several tons of gear some yards back from the shore, and a considerable portion of our time and energy was thus taken up.

Had we been obliged to camp out during the fortnight occupied in building our own hut, we should probably have realized much more thoroughly the drawback of its complicated structure.

We were, however, from the first day, able to make ourselves very comfortable in Borchgrevink's deserted hut, and Campbell and Levick, who preferred the fresh air, slept under a tarpaulin rigged up over the unroofed storehouse. They never, however, held undisputed possession of this shelter. When we had first swept the storeroom out we had disturbed and driven out a penguin who had chosen it as a secluded spot in which to moult, and this bird returned, no matter how often he was driven away, and persisted so pluckily in his attempts to oust the new inhabitants that we finally called a truce and allowed him to share the hut. Although he must have seen dozens of his companions killed when they strolled up to greet him and were added to our larder, he refused to take the hint, and for more than a fortnight he remained a fixture about the place, and was known to all of us by the name of "Percy."

He even seemed at times disposed to answer to his name, but although he never went down to feed he refused to break bread with us, even when tempted by the men with sardines. What happened to him eventually we never knew, but I fear that when he had finished moulting and showed himself in his new suit he was taken for a stranger and killed. Whether that was so or not, he disappeared, and for some days afterwards we quite missed his comical face, with its dissolute appearance and the tuft of feathers always hanging from the tip of his beak.

## CHAPTER IV

### AUTUMN AT CAPE ADARE

Trip up the Cape—Signs of penguins on the cliffs—"Erratics," and what they mean—Hanson's grave—Signs of approaching winter—Formation of new icefoot—Autumn seas—Penguins injured in the swell—The decoration of the interior of the hut—Description of a cubicle—Dimensions of the hut—Bathing and washing arrangements—Departure of the penguins—A real autumn blizzard—Loss of a tent—Photography in the Antarctic—Snowbergs and icebergs.

ONCE we had a roof over our heads and a satisfactory routine had been arranged, we were at liberty to give some attention to our immediate surroundings.

Until now our walks had been confined to the low beach on which our hut was built, and which will be seen from the photographs to be of very small extent; but on Sunday, March 5th, we had a short service in the morning, and then Campbell, Levick, Abbott, and myself climbed the cliff of Cape Adare and walked across the cape to the eastern side, from whence we had a good view of the Ross Sea beyond.

It was a stiff climb up to 850 feet, but amply repaid us when we reached the top. The most interesting thing we noticed during the ascent was the great amount of guano and dead penguins which littered the ground all the way up, showing plainly that even the steep slopes hereabouts were the home of thousands of penguins in the summer. In fact, some of them still occupied their nests, and these must have been the young birds of the past season which had not finished

moulting. It is a great testimonial to the energy of the birds that the parents should be able to keep their young and feed them at heights up to a thousand feet above sea-level. We could see even then that their mortality must be terrible, for the numbers of uncovered corpses strewn about the slopes was well above the average on the rookery below, and one can only suppose that the poor beasts are driven to this eerie by overcrowding.

The climbing was quite easy for men except when one or two snow-patches had to be crossed, but on these we certainly felt the want of ice-nails. Besides these places, there were one or two patches of loose rubble, which was inclined to move under our feet. The absence of much trouble from steep screes must be attributed entirely to the penguins, who have converted the track into a firm road.

Before we reached the top we came across several blocks of granite and quartzite, which had evidently been dislodged by the rapid weathering of the basalt beneath them and had been precipitated on to the cliff-side. On reaching the summit, where the slope is a very easy one, we found the ground littered with these foreign boulders. These "erratics," as they are called by geologists, lying as they do on black volcanic rock, are very striking; and, indeed, their significance is greater even than might be thought, for they tell us, as plainly as if we saw the ice, that at some former time a great glacier many thousands of feet in thickness must have swept down from the interior of the continent, bearing on its surface huge boulders of granite and other rocks from the great mountain range. When one sees evidence of such a flood of ice as must have been present to produce this outflow, it is more easy to understand the complete absence of any land animals or plants, except such small types as could be carried by winds from more favoured countries farther to the

north. It is to such "Ice Ages" in the Antarctic that we must in the main attribute the scarcity of types which is the chief feature of the life of the continent.

During the Southern Cross Expedition the Norwegian biologist, Mr. Hanson, died here, and at his own request his body was carried to the top of Cape Adare and there interred. We were unable on this occasion to find the cross which marked the grave; but later on we did so, and, while camped on top of the cliff in the following summer, Browning cleaned and levelled off the grave, and with small fragments of quartz on a background of black basalt he picked out an inscription, which can be seen in the accompanying photograph.

The temperature now began to fall steadily, and there were several signs that the winter was approaching. The snow which fell during the one or two mild winds no longer melted away quickly as soon as the wind ceased, but permanent drifts formed to leeward of the hut and the icehouse, adding very much to the safety of the one and to the efficiency of the other. In addition to this, the temperature of both sea and land was falling, and the cutting back of last year's icefoot began to cease as the sea water commenced to deposit ice instead of dissolving it.

It was very beautiful to watch the gradual formation of the new icefoot. This portion of the Antarctic coast reaches up until it is almost within the sphere of the great westerly gales that sweep round the world between the 40th and 60th parallel of south latitude. These rage almost without interruption from year's end to year's end, and it is these gales which constitute the chief dangers in our journeys to the Antarctic. Not only are they unusually constant and stormy, but there is no land to interfere with the seas they call into being, so that it is in these latitudes that the giant waves of the world are to be sought for.





HANSON'S GRAVE ON CAPE ADARE.





The heavy northerly swell which broke on the north shore of our triangular beach was a legacy from these westerly gales, and it was a sight worth seeing. The great rollers would come steadily and majestically towards the beach, bearing on their crests huge rolled fragments of ice, and rising before they broke to 10 or even 20 feet. They would then curl over and crash down on the shingle in a tangle of white foam, hurling the blocks of ice they carried many yards above the normal high-water mark, while pieces the size of a cricket-ball were thrown like a stone from a catapult past our heads, to break in fragments on the pebbles behind. The size of some of the larger of these blocks may be gathered from the accompanying photograph, and from the fact that three or four of them kept the whole party in water for washing and cooking for the whole of the year.

While we were walking round the beach, admiring the grandeur of the waves, we noticed several dark-red patches, which proved on examination to be penguins' blood. This caused us to look more closely at the few penguins which still remained on the beach, and it was at once evident that many of them were severely injured. The injuries were undoubtedly due to crushing, and there seemed no doubt that these birds, in spite of their wonderful activity in the water, were unable to cope with such a swell as this, where masses of ice, great and small, were grinding together in confusion. A day or two later, when the swell was much less, I saw some penguins trying to land on the floating ice off the coast. Though their efforts in this case were very amusing, it was clear that with a little more sea tragedy might have replaced comedy, and some of them might easily, as the men remarked, have "lost the number of their mess." As it was, no sooner did one get on to a piece of ice than he was knocked off or sucked off by the swell, in spite of a

liberal use of claws, flippers, and even beak in the effort to hold on.

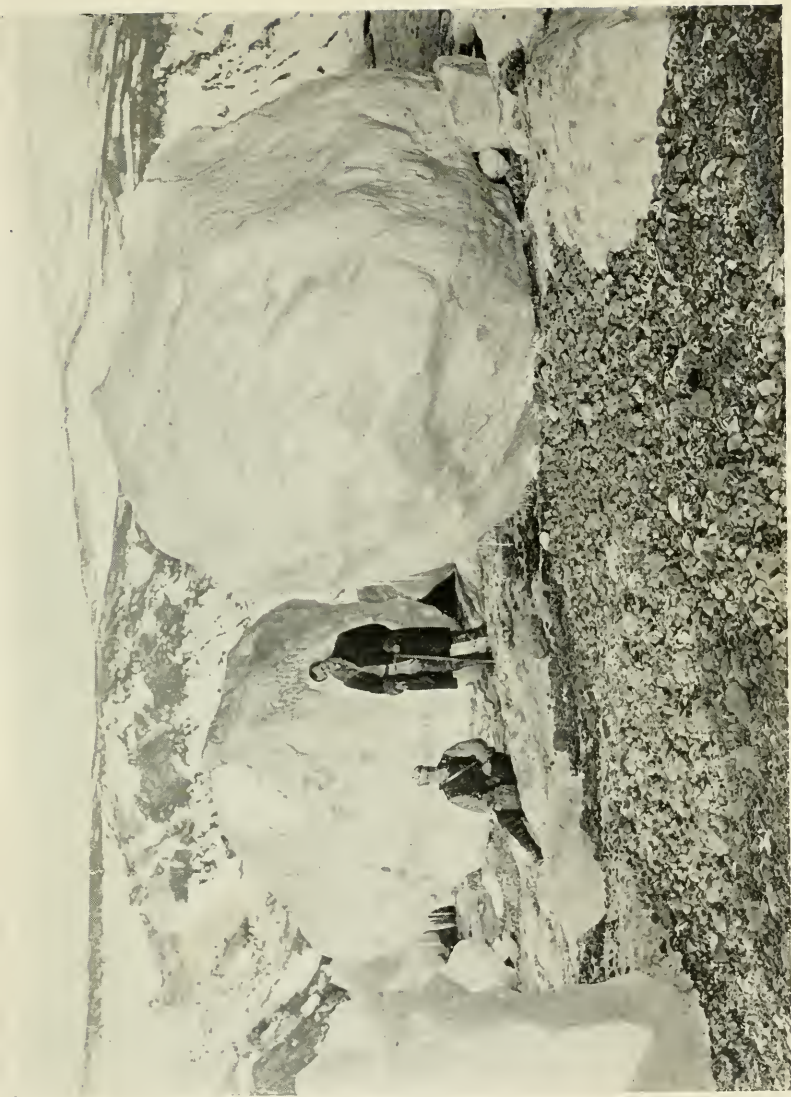
The question of obtaining fresh water was always a serious problem at Cape Adare. The hurricanes, which were common during the colder part of the year, and which were usually snow-free in their later stages, swept the beach clear of snow almost entirely, and the local drifts which remained proved to be so saturated with guano-dust that it was quite impossible to use the snow for cooking with any comfort.

We were therefore obliged to resort finally to the boulders which formed the icefoot, and which were covered with spray and in most cases formed of sea ice themselves. At the beginning of the winter we managed to find one or two boulders the nucleus of which consisted of glacier ice. These gave ice of excellent quality when the outside shell was chipped away, and later in the year we found that the salt had drained from those blocks which were undoubtedly sea ice, until the ice was scarcely perceptibly salt to the taste.

By the end of March the interior of the hut looked quite like a home, for each man had decorated his own cubicle with photographs and sledge flags; each had also shelves for his own books, and Browning had fixed up a set of library shelves.

The galley also was quite shipshape and the stove was working moderately well, and, in consequence, we were able to keep the temperature well up between 50° and 60° when the weather was not too boisterous. A strong wind, however, always created a mighty draught through the hut, and it was quite a common thing during a blizzard for the temperature of the hut to be down to well below freezing while the whole of the top of the stove and the first few feet of the chimney were red-hot.

It had originally been intended that each man should



ICE BOULDERS HURLED UP THE BEACH BY A HEAVY SWELL.



curtain off the 6 feet of space which was his own property, and some very artistic curtain material had been bought with this idea. We found, however, that there was never any need for such privacy, and the curtain material was put to better uses. Every one was allowed to use his own taste when arranging the furniture and in the decoration of his cubicle, but our ideas ran much in the same lines, and a description of my own cubicle will thus do very well as a sample.

The only official boundaries separating me from my neighbours on either hand consisted of two pencil marks on the wall ; and imaginary lines drawn at right angles to the wall from these marks, and projecting 6 feet towards the centre of the hut, constituted the limits of my territory. One of these imaginary lines I at once reinforced with my bedstead, an iron frame with a spring wire mattress, but the delimitation between Campbell and myself was left variable so that I should have some legal right to the use of the chart-table which projected from his cubicle into mine. The bed took up quite half of the available floor space, and underneath it the greater part of my geological outfit, my spare clothes, and the specimens I was working on from time to time were stored in wooden boxes, so that there was not much room wasted. The spring mattress was thus not quite an unmixed blessing. I still feel it would have been just as comfortable to lie on a bed made out of a number of cases, as I did in the Shackleton Expedition, as to lie on a mattress whose contour, thanks to the projection of several hammer and pick handles, and the corners of sundry tins, reminded one strongly of a West Country landscape in England.

By the side of the bed was a flour-box, which served to hold the candlestick and books which solaced many of the hours I spent in bed, and this completes the tale of furniture.



On the wall above the head of the bed were three shelves, which occupied in my mind all through the winter the same position that the sword must have done in that of Damocles. These were laden with the whole of my geological library and other books, and most of the apparatus I possessed which was breakable. Fortunately, here again our carpentry was considerably better than it looked, and if the hut is still standing, it is probable that the shelves are too. Below the shelves came the small picture-gallery I possessed, and (purely for the sake of appearances) an impressive map of the Antarctic was also pinned to the wall by the side of my bed, while a series of nails held such articles of clothing as I was obliged to don every two hours before leaving the hut to take the meteorological observations.

The hut was in all 20 feet square, and so the dimensions of our cubicles, which were 6 feet by 6 feet, left quite a considerable space for general use and we were never cramped for room. The comparatively large size of the hut was useful in many ways, and is distinctly to be recommended for any party which is intended to do much scientific work. It made all the difference to our comfort that we were able, thanks to this and to the presence of Borchgrevink's hut, to do most of our work indoors.

The great height of the hut, on the other hand, was decidedly a drawback, for it doubled its resistance to the wind and much increased the amount of time and material taken up in its erection.

From the plan it will be seen that the men's cubicles and the galley were arranged along one side of the hut, and the officers' cubicles and Campbell's chronometer-box on the other side. The stove was purposely fixed as near the door as possible so as to reduce to a minimum the labour of carrying fuel and ice, and the piping of the chimney was thus increased in length con-



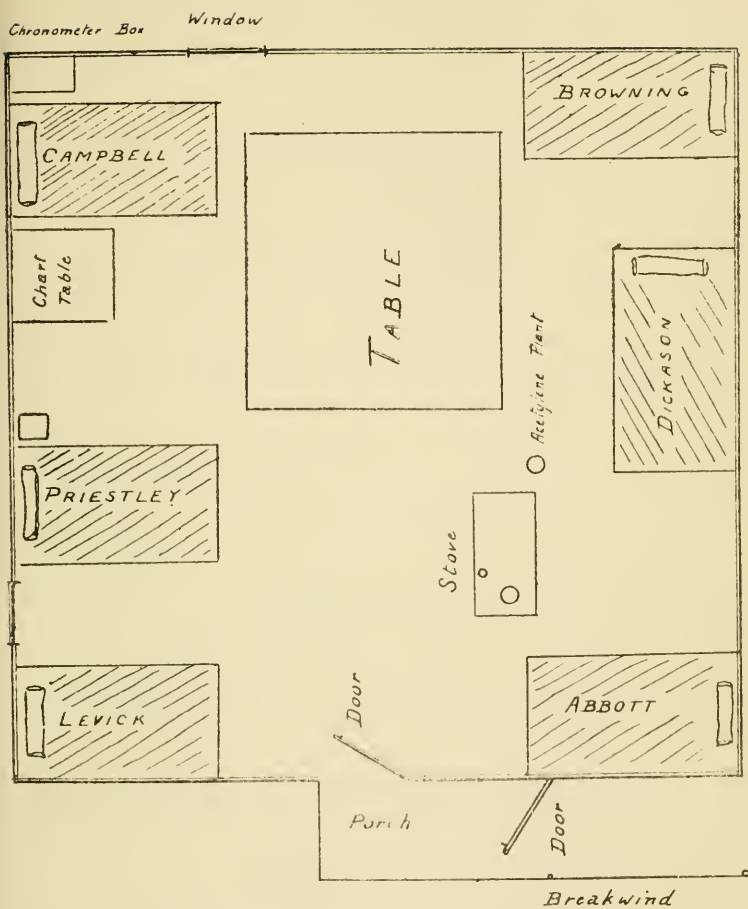
ABBOTT IN HIS CUBICLE.



DICKASON IN HIS CUBICLE.







PLAN OF HUT AT CAPE ADARE.

siderably. This latter fact, however, was an advantage rather than a disadvantage, for it very much increased the efficiency of the stove as a heating apparatus while decreasing the danger from fire. The position of the dining table was determined with reference to the windows.

A very essential portion of our equipment was the clothes-line, and this was hung from the centre beam of the hut to a nail fixed above the door. As there were only six of us in the party the arrangements for bathing and for washing clothes proved to be very simple. Every man had one day of the week told off to him, and unless he made an arrangement to change with some other member of the party he was obliged on this day to wash any clothes he wished, and to take his bath if he thought he wanted one. The only preparation necessary was the fetching of a bucket of ice from the icefoot, and so, even if we had but one bath a week, and sometimes missed this, we lived in a continual atmosphere of soap and water vapour, and if a man through excess of work was obliged to go without his own bath, he at least had the pleasure of sitting at his work and seeing other people having theirs, which was the next best thing. Washing clothes, especially Antarctic clothes, was never such an unmixed pleasure, but it was an unrivalled exercise. I have seen four strong men engaged in wringing out one of our woollen singlets, and working so hard that I have been impelled to cheer them up with one of the sailor "chanties" which were the fitting accompaniment of similar hard work on the *Terra Nova*.

Winter seemed to close down on us altogether when the last penguins left us towards the end of March. All of them had finished moulting a week or ten days before the last left, but the sea still gave no sign of freezing over, and so I suppose they felt inclined to linger where they had unlimited food until the severer

weather of the autumn warned them that they must delay no longer. After the penguins had gone, the skuas, who are largely dependent on them for their existence, soon followed. Indeed, it is probable that we should have lost these latter birds much earlier were it not for the feeds we provided them with from time to time while we were replenishing our larder. The rapacity of these birds is nothing short of amazing. Just before they left Browning saw one which had a curious excrescence protruding from its beak, and as all the men had been directed to secure anything peculiar either in the animal or mineral world he fetched the gun and shot the bird. The skua proved to contain a half-digested Wilson petrel, and the legs of this were sticking out of its mouth ; yet, in spite of the discomfort which this must have caused, the bird was vigorously engaged on a shoulder of mutton which had been thrown away on our rubbish-heap.

On March 19th we had our first experience of what a Cape Adare blizzard would be like, and as we had been lulled into security by the quiet month we had passed, we were caught napping and lost quite a lot of gear. Campbell and I had fixed up one of the sledging tents as a magnetic observatory a few days before, and as there was no snow on the beach we had weighted the skirting with basalt gravel. As we left the tent the night before the gale commenced we thought that it would stand most winds, and that, even if the frame did break, the gravel would hold the tent. We had reckoned without our host, however, and we had seen the last of the tent, for the next morning it had disappeared. The only trace of what had happened was given by a series of discontinuous grooves in the gravel of the beach between the former site of the tent and the sea. These grooves showed that the tent had been carried away bodily by the wind and had left for the South Pacific in a series of bounds.

Our other losses were insignificant, but our chief anxiety was for our untested hut. This shook and quivered like a thing alive, and there was quite a rain of plates and dishes off the shelves. It was on this night that I first realized the possibilities of my shelves, when I received a German dictionary on the side of my head, and this was followed by a deluge of ink-bottles, pencils, pens, and books. We were to find out that this particular wind was but a child when compared with some of the later gales, but at the time it seemed quite strong enough, and when I had read the anemometer records, which vouched for a velocity of 84 miles an hour, I did not feel safe until I had walked round the hut and examined it for cracks.

The sun now dipped below the horizon for some time each night, and it was evident that if photographs of the surroundings of the hut were to be obtained they would have to be taken soon, for, after the winter, sledging would take up most of our time. Levick and I therefore took several dozens, mostly of the various forms of ice common at the icefoot, and some of the results obtained would not have disgraced Ponting himself.

Photography in the Antarctic is all very well for the official photographers, but for an amateur like myself with a very limited equipment the work is full of trials. By dint of foraging through Borchgrevink's old hut and our own I managed to secure three jars—an old salt-jar from the *Southern Cross*, a prune-jar of our own, and the jar from one of our tow nets, all of which I made do duty as dishes for washing the films.

In the early days of our work we were obliged to carry out the photography in the unused hut, and it was not pleasant handling developer and water in a room which was some ten degrees below freezing point.

“The first stage of operations is much as at home, for the developer has to be prepared, and the film wrapped



LOOKING NORTH FROM CAPE ADARE.





up in the apron and immersed in the solution. It is necessary to have the developer as hot as is possible without frilling the film, and then to allow for the cooling of the solution by giving the film much longer to develop than the time indicated on the instructions accompanying the developing tank. After the development the film has to be put in acid hypo. while still not clean from the developer, for we cannot with our present arrangements afford sufficient water to wash it thoroughly at this stage. We are also not too well supplied with hypo., and it is necessary to use the same solution over and over till we find by experiment that all the virtue has departed from it. Meanwhile, the next film is rolled up in the still wet apron and immersed in the fresh developer as quickly as possible in order to forestall the tendency to freeze displayed by the water remaining in the apron. Occasionally, indeed, I have had to roll up the film in the apron while the latter was covered with ice, formed by the freezing of the water from the one washing we can afford to give it.

“The film is allowed to remain in the hypo. until nearly clear, and is then cut in strips with scissors, so that the hypo. can more easily get at any part of it. It remains in the latter then until the bath is wanted for the next film, when the photographs are fished out and put in the first washing water. Here they remain about half an hour, and are then transferred to the prune-jar containing the second washing water, to which is added potassium permanganate solution until the water is stained red by the unreduced permanganate, when the films are removed at once to the third washing water.”

This process had the disadvantage that it proved impossible to free the films from the specks of brown precipitate formed by the oxidation of the permanganate, and so after a few trials I was obliged to do

away with the latter and leave the films all night in the second change of water.

The last problem was that of drying the films when the air in the hut was liable to fall below freezing point during the night if a wind was blowing, and this was overcome by the use of alcohol to speed up the drying. After immersion in the alcohol for a few minutes the films dried in half an hour, and the alcohol itself was none the less suitable for its main use as a biological preserving medium because it had been used as a side issue in photography. Later in the year we were able to carry out the development and printing of our own photographs inside our own hut, and then many of these disadvantages were done away with.

During these days while the sea remained open the pack continued to drift in and out with the tide, and from time to time large bergs drifted past the point of the beach which we called the Spit, and some of these stranded and broke their backs on the shoal there. The tabular Barrier berg has so struck the imagination of the Antarctic traveller that it has become, quite correctly, the type of the Antarctic iceberg. It should not be forgotten, however, that in many parts of the Antarctic the true iceberg occurs in great numbers and with great variety of shape, and this was particularly so at Cape Adare. When we had a few minutes to spare from our various duties it was always well worth while to stroll to the end of the Spit and stand to watch these "Dreadnoughts of the South" sail by. On one occasion in particular we saw a very pretty example of the difference between these two great classes of bergs—the Barrier berg with about a third of its bulk above the water, and the iceberg with seven-eighths of its bulk below.

In one of the later days of March a small iceberg had stranded some way out from the Spit and had worked its way up on the shoal till it was perceptibly

higher, and the change of tide was unable to move it. On the afternoon of April the 1st Campbell and I were standing on the point, and we saw a huge Barrier berg, which was to all appearances twice the height and many times the bulk of the stranded iceberg, sail past well inside the latter, so that it passed over much shallower ground than had served to pull up its neighbour. It was a perfect proof of the difference of relation between the bulk above and below the waterline in the two types.

Many of these bergs stranded within sight of the beach at Cape Adare and were frozen in later in the winter, and it was by keeping a watch on their movements that we first gained some idea of the instability of the sea ice which was so great a trouble to us later in the year.

## CHAPTER V

### WINTER ROUTINE AND SCIENTIFIC WORK

The day's routine—The gramophone—Matches with the miniature rifle—Washing down decks on Saturdays—Winter in the Antarctic no longer terrible—The acetylene plant—Scientific work—The transformation of sailors into scientists—Meteorology and biology—An excursion in the pram—No good work possible without help from all.

AS soon as we were able to move into our own hut a regular routine was commenced, which was adhered to during the winter—in fact, until the commencement of the first sledge journey. A description of any single day will thus give a very good idea of the way the winter was spent.

Breakfast-time until we started the night watch was, I am afraid, never a very fixed quantity, because there was no alarm-clock amongst our equipment. In consequence we were obliged to depend on the chance of one of the party waking up somewhere about half-past seven and then waking the cook. Sailors, however, are used to having to wake up at a particular time, and it was really very seldom that Dickason had to be roused by another man, while it was only once or twice during the winter that all of us overslept to any considerable extent.

When the cook woke or was waked at 7.30 he at once proceeded to freshen up the fire. This had been banked up with large pieces of patent fuel the night before by the last man to turn in, and usually





BROWNING IN HIS CUBICLE.



THE GALLEY.



there was no need to relight it. He then prepared the porridge and the dish of seal steaks, or penguin steaks, and bacon which was our almost invariable breakfast, and at ten minutes to eight he called all hands. Though our beds were very comfortable, we usually tumbled out pretty readily, and then the usual routine was a walk round to the lee of the hut for a wash, which consisted of a thorough rub down of face and neck with a handful of snow from the drift to leeward of the hut, and then a vigorous use of the towel. We found by experience that the snow loosened the dirt and the towel removed the greater part of it. Certainly it was the most complete freshener one could wish for, and I fear it was only a spirit of emulation and a desire not to be outdone by Campbell which kept me up to scratch for the greater part of the winter.

After this wash followed breakfast, which, as I have said, usually consisted of a plate of porridge, followed by seal or penguin steak, and a better breakfast it would be hard to obtain. Appetites in the Antarctic are seldom, or never, small, and penguin breast cooked as Dickason or Browning could cook it was a delicacy worth travelling some way to taste. The breakfast usually took less than the half-hour to dismiss, but each mealtime was always prolonged to the regulation naval "hour," and after the meal we retired to our bunks or to sit round the stove, and it was then that Campbell would issue the orders for the day.

The hours from breakfast to our one-o'clock lunch were usually spent by all hands on general work. There was ice to be fetched for the cook, stores to be broken out, various articles of equipment to be made or altered, and these things invariably kept the men fully occupied in the morning. For Campbell himself there were the chronometers to be wound at nine o'clock, and then usually his surveying work filled in the rest of the working day. I had my meteorological observations



at intervals of two hours throughout the day and various ice experiments to carry out and watch, and Levick was usually busy with the stores or with his photography.

At one o'clock the cook appeared at the door of the hut and blew his whistle, and the cry "Lunch-oh!" always met with immediate response. Working in the keen autumn and winter air invariably produced a mighty appetite, and long before the next mealtime came round each man was ready and willing to do his share, while we valued the meals equally much from their social aspect.

Lunch usually consisted of bread and cheese, with honey and jams, and occasionally potted meat, with perhaps a cold round of seal beef or half of a cold roasted skua, for, again, we relied as much as possible on local products. Skua gull even when well roasted is a little tough and high, but it is no tougher than many joints I have tasted in civilization, and certainly in the latter respect it cannot vie with many kinds of English game.

Lunch, again, was followed by the usual "Smoke-oh," and then we all dispersed to resume our tasks, until at four o'clock we again came in for tea and toast, or rock cakes. After tea every one was allowed to loaf, exercise, or work, as he pleased, and the official day's work was over. Occasionally we used to take our ski and run down the snowslopes which had formed in the lee of Cape Adare at the back of the beach, but there was not enough snow to make this a popular exercise, and a much more common form of amusement consisted in walks to and fro along the beach. One of the drawbacks to our winter quarters was certainly our confinement to the narrow limits of the beach until the sea ice formed at the beginning of the winter.

At seven o'clock came the last meal of the day—a





TWO METHODS OF WASHING CLOTHES.

dinner of two courses ; meat and vegetables, followed by a simple sweet. The sweet was usually either bottled fruit or the suet or plum duff dear to the heart of sailors ; but this, like everything else, was well cooked, and the dinner was always the crowning success of the day's cuisine.

After dinner we usually read or listened to the gramophone until about ten o'clock, when all hands turned in.

Few people who listen to a gramophone at home can realize what such an instrument means to people living beyond the confines of civilization. To really musical people a violin or piano would probably be much preferable, but the Northern Party, although fond of music, were more universal than classical in their taste, and the gramophone has the advantage that one can turn on instrumental or vocal music according as the audience wish, and so suit everybody's fancy. Our concerts this winter continued night after night, and though some of the favourites were played again and again no one ever tired of them. The one drawback to the concerts was that no one wanted particularly to look after the instrument, and this difficulty became quite acute during the winter. The operator of the gramophone had to leave his book or his work every few minutes and switch it on or off, or wind it up, and it was much pleasanter to lie on one's bed reading until one's favourite came round and then to listen for a change. I had been early excused from this work as I had a good deal of writing up of observations and notes to do in the evening, and I am afraid I worked this excuse for much more than it was really worth. The situation got more and more difficult towards the close of the winter, and the concerts at one time began to flag, when some genius hit on the solution of the problem. We had with us a little miniature rifle, and matches between men who fancied themselves with this were quite common. When it was

suggested that the loser of such a match should be bound over to play twenty tunes on the gramophone during the course of the same week all our troubles in this respect were past, and before long we were obliged to remit some of the fines for fear some one should try to play them off during the night watch. Jestings apart, however, I think we would all agree that we got more pleasure out of the gramophone during this winter than out of any other of our amusements ; and the amusing part was that there seemed to be amongst our repertoire songs to suit pretty nearly every incident out of the daily run which happened to us.

The only regular break in the routine just described occurred on Saturday morning, when every one piled all the gear usually kept on the floor of his cubicle on to his bunk, and the three men thoroughly scrubbed down the floor of the hut. During the morning, whether the weather was favourable or not, the three officers were turned out of the hut to occupy themselves as best they could, outside if the weather was favourable, and inside the storeroom if it was not. Many a time have I cursed the naval passion for cleanliness when I have been stamping up and down in a gale of wind during these hours ; but we were all proud of the way in which Campbell kept the hut, and no one more so than the men who did the work.

These mornings, too, were never without excitement for me, for I had several hundredweight of geological specimens and tools to pile on my bed while the cleaning was going on, and it was always a gamble whether or not I should arrive in at the close of the operations to find the bedstead buckled up and one of the men lying under it with a broken back.

It will be seen from this description that the winter possessed no terrors for us at Cape Adare. Indeed, it is difficult to imagine circumstances under which we should have had reason to be more content with







COMFORT IN THE ANTARCTIC.



LIGHT AND SHADE IN THE PACK.



our life. The days when the Polar winter under normal conditions was a thing to be dreaded are past now, for good and all, I believe. Modern equipment has triumphed over both the darkness and the cold, and also over that deadly enemy of all explorers, scurvy; and the radius of discomfort has been restricted to those months when the hut is left behind, and equipment is reduced to the primitive minimum, which does not essentially differ from that used centuries ago by the aboriginal races of the far north.

Mention of that darkness which has in the past been the bane of expedition after expedition naturally suggests to the mind the means by which we lighted our hut during the night. The gas we used was the acetylene, which had already been proved by the two previous expeditions to be very well suited to the conditions. In the Shackleton Expedition all the gas was passed from the generators into one general reservoir, for which a special stand had to be set up immediately inside the door of the hut to prevent the water which generated the gas from freezing. In the present case each burner had its own little generator, and the reservoir was done away with altogether. This was a great saving of space certainly, but it had some disadvantages which were never entirely overcome, though it is only fair to the makers of the plant to admit that the trouble we had may have been due to our own want of experience.

The chief drawback to the absence of the reservoir was the fact that the plant needed constant watching. No sooner did the pressure within the generator exceed a certain amount than bubbles of gas began to escape and rise through the water surrounding the carbide-holder, and then the only way of keeping the hut habitable was by removing the generator outside the hut door and allowing it to freeze. Another trouble I also believe to be intimately connected with the same

cause was the choking of the burners, due to impurities from the carbide carried up the pipe by the rush of gas from the generator. This would have been avoided almost entirely had the gas been carried from the generators, through water, into a reservoir, and conveyed into the main supply pipes from there.

Nevertheless, when the plant worked well we obtained a very respectable light, and we had no great quarrel with it. It was certainly very economical, for there was practically no waste of carbide at all. It was lighted usually in the winter as soon as the cook of the day rose in the morning, and the generator was lifted out of the water in the evening, when the gas was allowed to die out gradually. This last gas seemed sometimes as if it would never give out, and it was a decided distraction when one was endeavouring to fall asleep, as can be readily seen from the following extract from my diary :—

“ The acetylene has recently devised a new and very ingenious method of torture. As a rule the gramophone alarum wakes several of us at four o'clock besides its intended victim, and just about this time the gas, which unfortunately cannot be turned off, begins to get low. The pipes are continually getting choked with impurities, and the gas under the reduced pressure finds some difficulty in forcing its way through. Consequently from time to time and for varying periods it makes a noise which can best be described as like the sound of a motor-bicycle doing thirty miles an hour on a very distant road. There is, however, this difference: when a motor-bicycle has passed it does not return, and even on the main roads of England one is not troubled by a constant succession of motor-bicycles at 4 a.m. The gas does the thing much more thoroughly. One has passed and one breathes a curse and settles oneself in the blankets for a nap, when along comes another, travelling exactly the same speed

as the first but curiously enough remaining within hearing about seven times as long. After another interval a whole series of them follow, probably the club out for an early morning ride, and occasionally one travels a short way and is then pulled up with a jerk. This must be a police trap. By the time this has gone on for half an hour one is in a state bordering on madness and reaching under the bed for something to throw at the gas. So far things have not gone any farther, but one of these days our patience will be tried too far and the gas will suffer a total eclipse."

Time never hung on our hands during the winter, for with a small party such as ours every man has two or three departments of our equipment for which he is held personally responsible, and besides this everyday work there was always enough scientific work to occupy everybody in their spare moments, and, indeed, more than we could ever hope to do.

One of the most noticeable features of an expedition is undoubtedly the way men throw themselves into work which one would expect to find of no personal interest to them. In this particular case we left New Zealand a party of six men, with only one amongst us who made pretensions to any knowledge of science. During the first few months, while we were on board the ship, science was at a discount as far as the shore parties were concerned, and the scientists of both parties were compelled to turn their attention to sailing. The afterguard were then divided into watches like the rest of the crew, and took their part in the manifold activities of a seafaring life, such as coal-trimming, working at the pumps, swinging the yards, etc. In fact, to the general eye, the Northern Party might all have been taken for sailors—one officer, one naval surgeon, three A.B.'s, and one very ordinary seaman. Now, however, that we were settled on shore

all this was changed, and to the uninitiated the only evidence of the calling of any of the party was perhaps a certain pithiness and pungency of vocabulary common to all. It was impossible to cope with any single science single-handed, and as we had to give a good account of three sciences or to be written down as failures all hands were pressed into service. Officers and sailors alike took their turn at the observations, and perhaps the only clue to this fact presented by the log-books was a certain laborious neatness and fullness about those entries made by the mess-deck observers.

Two-hourly meteorological observations were commenced as soon as the work of landing was completed and the meteorological screen could be erected, and these were kept going during the whole of the year we were at Cape Evans, except on two occasions of three or four days each, when all six men were away sledging. These observations, of course, meant that some one must always be near the hut ; but there were very few of them missed after Dickason and Browning, who shared the work of cook, had learned to read the thermometers and barometers accurately. In fine weather the observations involved no hardships at all, but it was far otherwise when blizzards were blowing, and on several occasions the observer narrowly escaped being laid out by some stray box or some piece of wood which had been picked up by an unusually heavy gust. The screen in which the instruments were fixed was lashed to a box, which was weighted down with stones, and placed some eighty or hundred yards from the hut, so that the presence of the latter might not influence the reading of the thermometers or complicate the observed direction of the wind. This distance, therefore, we were obliged to cover on each trip to the screen, and to prevent the observer from getting lost in a blizzard at night a guide-rope was fixed up between







THE FORESHORE AT CAPE ADARE.



OVERHANGING BOULDERS ON THE CAPE ADARE ICEFOOT.

the screen and the hut. During the more furious of the gales it would sometimes be ten or fifteen minutes before we could force our way back to the hut from the screen, and sometimes it was certainly due solely to this guide-rope that we succeeded in getting back at all.

Our geological work, like the meteorological, was rewarded by a rich harvest of results, but for a disproportionate ratio between the amount of work put in, and the results obtained, nothing could compare with our attempts at marine biology. Our equipment was certainly only a skeleton one, but there seems no doubt that the strong tidal currents were the main cause of the barrenness of our catches. These carried many bergs of different sizes past the beach every day, and the shallower portions of the sea bottom must long ago have been scoured free from life by the grounding of these monsters. Be that how it may, however, our whole catch during the dozen times we dredged, consisted of one sea-urchin, one polychaete worm, and one sea-spider, and we were compelled at last to give up hope of doing useful work in this line with our very meagre outfit. The excursions we made in our solitary boat, a Norwegian pram, were interesting and were sometimes exciting; but they were never fruitful, and some of the difficulties with which we had to cope may be gathered from the following extract from my diary for March 28th :—

“The temperature was  $+18^{\circ}$  F. when we launched the pram, and the calm sea froze over very rapidly, so that at the end of a couple of hours, long strips of ice about three-quarters of an inch in thickness formed over the water that had previously been free from ice. As fast as these strips formed and reached a certain thickness and size, so that they were affected by the current, they were floated towards us, and we had then either to force our way through them or were



ourselves forced farther away from the shore with the certainty that we should have to break up several hundred yards of the ice before we could land. It was impossible to risk this, as each little strip of ice took half an hour to push through with all hands working, so that the dredging finally resolved itself into hauls of a few yards each. When we reached one of these ice strips we were obliged to haul the dredge and fishing-lines in, and one of us would scull with the stern oar, while another looked after the lines, and the third hung over the bow with one of Borchgrevink's wooden snow-shovels and cleared the ice away, or, if we came to a thinner piece, paddled with the shovel. In the latter case he could get a considerable leverage against the thin skin of ice, and the amount of work he was able to do was only limited by the capacity of the shovel to stand the strain, or, if the shovel was not the weakest link, he would begin to feel the strain amidships, and would have to ease up a little and let the others do a larger share of work. Later on I found that the wooden bucket we had taken to hold our catch was a much more efficient instrument for breaking up the ice when it was too thick to permit of my paddling, for there was a larger surface of ice smashed each time."

The more of this thankless work we did the more I appreciated the three men who were my helpers in these and other tasks. Campbell was always willing for me to have any or all of the men for my work whenever I required them; but I made a point of never employing any but volunteers. My experience has been that it is very easy to get work done if it immediately affords interesting results, such as new species of animals or fish, new rocks, or something pretty to look at; but it is not at all easy as a rule to obtain assistants for work which has again and again proved to result only in failure or has no results

that the assistants can appreciate. I count myself especially fortunate, therefore, in that I have always had volunteers who are willing to take routine observations and frequently to go without their meals in order to do pick-and-shovel work or hauling on dredges. Both these latter types of work have often yielded no results at all, but the men have cheerfully carried on until I myself, who should surely have been the last to give up, have returned home utterly tired of marine biology and everything connected with it. To Abbott, Browning, and Dickason, therefore, must be attributed a considerable share of the results achieved in this and other work, and the Northern Party, arriving in the Antarctic with five sailors and one scientist, may be fairly said to have returned a year later with six scientists, all of whom had done original work in one department or another.

## CHAPTER VI

### THE FREEZING OF THE SEA AND THE GREAT MAY BLIZZARD

The sea freezes in spite of wind—Pancake ice—Our trips are extended—One of Borchgrevink's depôts—We make use of his coal and provisions where possible — “Limejuice nodules” and “glue jam”—The gale commences—Showers of pebbles—Trials of a meteorologist—Very few losses—A trip for bath water—Is gust or lull most dangerous?—Work indoors—The wind outlasts our patience—Spray ridges—The night watch—The “Carusophone”—The night watchman's hymn—Auroras—The cave-berg—An accident with magnesium powder—The gramophone as usual caps the incident with an apt quotation—Our very best aurora.

THE freezing of the Antarctic sea is always a most impressive sight, and nowhere can it have been seen to better advantage than in the stormy autumn of 1911 at Cape Adare. As soon as the temperature begins to keep fairly low, crystals of ice will form in the sea water at every opportunity, and these soon form an oily scum on the surface of the sea. At first these form so slowly that they are dispersed by every breeze, but, as time goes on and the temperature falls lower and lower, the ice forms more quickly, and at last even the most ferocious blizzard cannot keep the sea open for more than a few minutes after its cessation.

The power of the frost is never more evident than when watching such a scene and seeing how quickly a heavy swell can be tamed and even killed by the ice.

On April 19th a strong gale raged for some





THE FREEZING OF THE SEA.



A SPUR OF THE ICEFOOT.

hours, and completely cleared away the ice which had formed over the bay during the previous few days. When we woke on the 20th we could hear heavy gusts still striking the hut every few minutes, and the bay was a turmoil of white water, while the tops of the waves near the shore were being dashed against the ice-foot as spray, so that it was impossible to go within a few yards of the shore without getting wet through and iced up. It was plain, by the feel of the air and by the speed with which spray ridges were forming on the icefoot, that the temperature was low, and we were soon to have much more striking proof. After a glance at the scene and a walk for a short distance to look at the swell to the south, we returned to the hut for breakfast, and when we once more ventured outside after the meal the scene was changed entirely. Nowhere except immediately along the icefoot were any white tops to be seen, and what remained of the swell was heaving sullenly beneath a coating of ice crystals.

Indeed, from a vantage point several hundred feet up the slopes of Cape Adare the sea, seen in the slanting rays of the sun, presented much the same appearance as that of a field which has been allowed to lapse into pasture-land after many years of ploughing, except that the ridges and furrows instead of being still were all moving steadily towards the north.

As the morning proceeded the swell decreased more and more, until movement was scarcely perceptible ; and then, as the coating of ice became more rigid with increased thickness, it was unable to adapt itself even to this small movement, and the sheet broke up into small angular pieces a foot or two broad. As these rubbed gently against each other the corners were removed and the edges were upturned, and before our eyes there had taken place the formation of a field of the pancake ice which has from the earliest times been one of the marvels of the Polar seas. All these

changes had taken place in the ice before the day was past, and during the following night the swell disappeared entirely, the individual pancakes were cemented together, and once more the sea was covered by a single sheet of ice, scarred only here and there with cracks running from one stranded berg to another, or between two fixed points on the shore. Thus it will be seen that the high latitudes of the world are given over for the greater part of the year to a frost sufficient even to bind and reduce to impotence seas which have earned, with justice, the reputation of being among the stormiest in the world. The sea, however, has an ally who will never admit defeat, and it will be seen that from time to time the winter blizzards can break the ice up, and carry it north, conferring on the water a freedom which endures for the period of duration of the gale.

The ice whose formation has just been described persisted for some days, and gradually became thicker, until, on April 25th, that in Robertson Bay would bear the weight of a man, though beyond the confines of the bay it had been broken up again and again by the inroads of the pack carried against it by the tidal currents. Now, for the first time, we were able to extend our excursions beyond the shores of our little beach, and only those who have been cooped for months within narrow limits can appreciate what a relief this was to all of us. We had tramped up and down and round our winter quarters until we knew every inch of it, and we were very pleased to be able to examine the coast for some miles to the south of us. We made the most of our liberty during the next few days, and the length of our trips was only limited by the fewness of the hours we could afford to give to exercise.

It was about this time that, during a short walk along the cliff side of the beach, I came across a depôt which the Southern Cross Expedition had left at the



foot of the cape—I suppose in case the hut and the beach should be completely wiped out by a tidal wave. The depôt had evidently been damaged considerably by the wind and by rock-falls from the cliff above, but many of the provisions were still in quite good condition. Although we never had occasion to broach this particular cache, there were many things which had been left by the Southern Cross Expedition for which we had reason to be very grateful during the year we spent at their winter quarters. In particular we made use of what coal they had left that had not been removed by the winds, and two or three boxes of charcoal, which must have been provided as fuel for some patent stove, proved to be invaluable for banking up our fire at night. The charcoal burnt very slowly, and if a few bars were placed on the glowing coals when the last man turned in, the cook was certain to find the fire alight in the morning. Perhaps the two kinds of the Southern Cross Expedition provisions which will always bring back the pleasantest memories to members of the Northern Party are the chocolate nodules flavoured strongly with lime-juice, which we used for thirst-quenchers during the summer-sledging, and of which there must have been many thousands in the disused hut ; and a stiff, brown paste stored in large stone jars and tasting of greengage and malt extract. We were unable to find out the correct name of this latter food, but we unanimously christened it “glue jam,” a name which is peculiarly appropriate, as will be vouched for by those who have been fortunate enough to taste it. This last was always a dangerous rival to our own preserves, and was a great favourite with all of us.

The one point about the equipment of the former expedition which puzzled us for a long time was the immense number of ball cartridges which had been left in cases near the hut, but this is, after all, easily

understood, I fancy, when one realizes that these men were the pioneers of the Antarctic, and were the first expedition to winter on the shores of the continent. To us who know the absolute harmlessness which is the principal characteristic of the land fauna of Antarctica, it is difficult to realize that even so few years ago the continent was completely unknown, and that there was the possibility that carnivora as fierce as or fiercer than those which inhabited the earlier discovered land-masses of the world might have their habitation amongst the ice of the South.

We were very soon, too, to have an opportunity of finding that the accounts of the weather met by Borchgrevink and his companions were not by any means overdrawn. Up to this time we had experienced no gales to which I could not draw parallels from my year in the neighbourhood of Cape Royds, and I must confess as regards myself that I was beginning to be inclined to be sceptical of the accuracy of the reports which laid stress upon the fact that men were constantly being struck by flying pebbles. In the light of after events, I can only place on record an apology for ever having doubted the accounts of our predecessors and describe the gale which convinced me, in the hope that I may receive more credence than I gave.

The blizzard, which we came to speak of as the "ten days' wind," began during the night of May 5th, and my first knowledge of it came when I was waked by the noise of the wind at 4 a.m. In spite of the creaking and groaning of the hut, and the rattle of our gear that was hanging from the walls, I could make out definite gusts which appeared to be of terrific force, and which were accompanied by a rattling noise. My mind at once flew to Borchgrevink's account of showers of pebbles, and when I got outside the door on my way to take the eight o'clock observations there was no doubt at all about it. I like to remember that

I had the grace to register a mental apology even as I crouched with my back to the wind in the attempt to collect as much breath as possible. The little trip of a hundred yards or so to the screen was my first experience of what a Cape Adare blizzard really could do when it liked. My lesson was to be a final one, and as I got beyond the partial lee afforded by the hut I was picked up by the wind, my legs were flung from under me, and I slid a matter of twenty yards on the small of my back. By this time I was in a mood to believe anything, and if I had been told, as I hung on to the guide-rope and coughed up grit, and home-truths about the wind, that the speed of the gale was a thousand miles an hour, I think I should have considered it an under-statement. I felt, indeed, that I could appreciate the feelings of strongly glaciated and striated pebble.

The rest of the trip was more of a success, for I now found that the correct way to walk with a wind of this type was to face it, hang on to the rope, and let myself be blown back step by step, breathing in the lulls and allowing myself to be breathed in the gusts, only hoping all the while that the bottom of my lungs would not be blown out for good. When I had reached the screen I began to be really proud of myself, for it was then that I first realized that instinct had made me hang on to my notebook and pencil during the whole of the trip, and so I had not to return and repeat the journey. The trip back to the hut was hard work, but without incident, for long before this everything movable had been carried off into the sea, and so I escaped the main danger which attends the meteorological observer at the commencement of a wind. It was very fortunate, indeed, that this extraordinary gale had been preceded by several of ordinary strength and short duration, for we were already getting weather-wise and lost nothing of real importance during the

blow. The only losses I had to chronicle after the morning's survey of the quarters were a half-flensed sealskin which had been carried several yards to leeward, part of the porch of the hut, and one fur mit which was torn from its fastening during my slide.

On May 7th as the wind lulled slightly for a few hours during the morning, I was able to get down to the icefoot by watching the gusts and crouching in them ; and directly I was able to get a good view to the south, I could see at once that the gale had put the clock back twenty days. The description of the sea in my notes for the 19th of April would have applied equally well on this day. Not a scrap of ice was in sight, and the whole bay was a chaos of tumbling, white-capped waves, which swept swiftly along, heralded long before their approach by the stinging spray whipped from their tops.

The next day found the gale, if anything, increased ; but by now it had blown completely clear of snow and we were able to get about, though with great difficulty. As it was my day for a bath, and I had missed the previous week, I even ventured to the Spit for a bucket of ice to melt over the stove ; but long before I had the bucket and the few fragments of ice which had not been blown out of it safe at the hut, I had become convinced that the game was not worth the candle. Indeed, if buckets had been less scarce and less useful, it is probable that this one would have been sailing to the north in a very short time, to be imbedded finally in the deposits at the bottom of the sea.

It is difficult in such a wind as this to decide whether gust or lull is most dangerous. If one is straining with one's whole force against the wind and this suddenly drops a fall is inevitable, while an unexpected gust may dash one down with such force that one can feel one's frame creak all over. The bruises and grazes mount up every two hours when one strolls out of the





A COMFORTABLE SHAVE.



CAPE ADARE AND THE NORTHERN PARTY'S HUT.

To face p. 90.





porch and is caught up and whisked away to the meteorological screen—not quite with the speed of a meteor, perhaps, but still decidedly too fast for comfort.

By this time we were getting used to the wind, and the roaring in the ventilator passed almost unheeded. We were, of course, confined for the greater part of the time to the inside of the hut, but everybody had enough to occupy them. Levick was in the throes of a conflict with an epic poem after the style of the Ingoldsby Legends, and Campbell working on his chart of the beach. Abbott and Browning were at work fixing up a trapdoor to close up the ventilator of the hut during blizzards, and Dickason was busy with his cooking and bread-making (for whether the weather were good or not, our appetites never seemed to fail). Last, but, in my own opinion, not least, I was at work at the Antarctic equivalent for “making hay while the sun shines”—that is, entering up arrears of notes while the blizzard blows.

The 9th saw no change in the fury of the gale, and by this time we were all getting heartily sick of it, and the entries in the meteorological log began to testify to the exasperation of the observers. The only adjectives which seemed in any way appropriate were used again and again in the “remarks” column, and with the slight change of the word “meteorologists” for “spirits,” the following quotation from Dante seemed to apply equally well to Cape Adare as to the Inferno :—

Bellowing there there groaned  
A noise, as of a sea in tempest torn  
By warring winds. The stormy blasts of hell  
With restless fury drive the spirits on,  
Whirled round and dashed amain with sore annoy.

It was on the evening of this day that the blizzard reached its height, and though it did not die away

until the 13th, it was never after this unusually strong. At the same time as it lost strength, however, it swung round until it blew from the south, and the spray from the waves was carried on to the beach instead of being confined to its edge. Very soon spray ice-ridges had been formed, which were two or three feet deep near the shore, and stretched inland in places for a hundred yards or more, while it was impossible to go to windward of the hut at all without getting wet and icy. Indeed, the results of this spray were to be seen after the gale even on the cliffs of the cape, and it was no wonder that all the drifts and lakes on the beach were quite salt.

This was easily the worst wind I had ever seen, except perhaps the one which so very nearly accounted for the *Nimrod* on her first voyage from New Zealand in 1908. For velocity and steadiness, indeed, it far surpassed this latter, but the exception is prompted by the ever-present sense of impending danger, which has caused that first Antarctic gale I encountered to stand forth in my mind to the dwarfing of almost all others.

We now felt that our hut had been thoroughly tested, and only once after this did we feel at all anxious for its safety. The chief trouble that bothered us indoors during the wind, indeed, was the difficulty of opening the door. When the hut was erected we found that the door was on its windward side, and in order to prevent the wind from blowing directly against this we prolonged the porch until its wall projected beyond the windward wall of the hut, so that the wind rushed past at right angles to the opening.

This had excellent results in every way but one. When a gale was blowing, this rush of air past the entrance to the porch caused a partial vacuum within the porch, which in its turn was the cause of an immense air-pressure on the inside of the door. A considerable exertion of muscle was thus necessary to open the



A RELIC OF PAST FORESTS.



THE CLIFF OF CAPE ADARE AND THE ROSS SEA.



latter at all, and, when once opened, the roar of the reinforced wind outside was so appalling that the observer was always severely tempted to return without venturing beyond shelter at all.

A study of the meteorological records of the Southern Cross Expedition had at once shown me that they had kept a night watch going during the winter months of the year, and, in spite of our small party, I was anxious to make our observations tally with theirs as closely as possible. Campbell readily agreed to this suggestion, and on May 16th the night watch was instituted on the anchor-watch system—that is, with each man taking two hours. The first night or two of this passed off all right, but it was soon clear that this arrangement would be a big strain on the party if it were kept up for a couple of months, and Campbell offered a reward to the man who should invent the most serviceable alarum to take the place of the alarum-clock we had omitted to bring.

The sailor is nothing if not inventive, and the prize was awarded the same day to Browning, who claimed that his invention, the “Carusophone,” as it came to be called, was infallible. At one end of a board about 3 feet long he had fixed a rigid upright, and at the other end a piece of bamboo which acted as a movable spring. About halfway between these was a stand, which held a candle, graduated by experiment, and bored with holes through wax and wick at intervals, each of which represented a time-space of two hours. A piece of thread was tied to the fixed upright, and from there passed through the top hole of the candle, and its other end was tied to the bamboo spring, and drawn tight, so that the latter was in a state of considerable tension. Another piece of thread passed from the spring in a direction away from the position it tended to take up when the tension of the first thread would be released, and this was carried to the starting-



handle of the gramophone. The gramophone was then wound up to its fullest extent, the needle placed in position at the commencement of a record, and the alarum was ready to work.

At midnight the latest member of the party turned in, and before doing so he lighted the candle on the "Carusophone." This then burnt steadily for two hours while all hands slept the sleep of the just, until at two o'clock the appointed span was completed, and the thread which passed through the wick was burnt through. Then the bamboo spring, released by the breaking of the thread, sprang back, and pulled over the starting-lever of the gramophone. The plate and record then commenced to revolve, increasing in speed little by little to the accompaniment of a noise which bordered on the infernal, and was at first calculated to wake the whole party. In case the watchman should become used to the noise we selected as the record which performed this honourable duty every night the "Flower Song" from Carmen, sung by Signor Caruso, not, I am afraid, because of our classical taste in music, but because it was the loudest we possessed. In consequence the gramophone alarm was christened the "Carusophone," and its efficacy was such that on one occasion only, when the draught during a blizzard blew out the candle, did it fail to go off, and on no single occasion did it fail to wake the night watchman. Indeed, for the first week or two, judging by the comments it evoked, it woke every one, but even then we were so proud of it that no one said nearly as much as might have been expected, while after a week or two its only effect was to give a somewhat noisy trend to our dreams.

By means of the "Carusophone" the night watch became much less burdensome, and we were able to restrict it almost entirely to those of us who were more particularly interested in the weather. Campbell, Levick, and







THE WHEREWITHAL TO BUILD A HUT.



THE DRIFTS ON THE LEE OF OUR HUT AT CAPE ADARE.

Abbott volunteered to take it by turns to sit up until midnight, and then the "Carusophone" candle was lit. At 2 a.m. I was turned out by the alarum and took the observations, and I then sat over the fire reading or washing clothes until 4 a.m., when I read the instruments again, set the alarum, moved the trumpet of the gramophone round so that it was directed to its next victim, and then turned in. At 6 a.m. the alarum repeated and called Browning, who by this time had become my regular assistant in this science. He did the six o'clock rounds, entered them up in the log, and then made up the fire. At seven o'clock he called Dickason, and the night watch thus had the additional advantage that the breakfast was always up to time because the cook rose punctually at seven o'clock and found the fire in good condition.

One of our most popular songs was adapted to the requirements of the night watchman, who greatly required a safety-valve when waked up on a breezy night at 2 a.m., and often during our second year at Inexpressible Island I wondered what Simpson thought when he found this lyric at the beginning of the meteorological log-book :—

I hear you calling me.

    You called me when the gale was at its height ;

    Before I went from you into the night

    I came—do you remember?—back to you

        For one last kick

    With which to vent my spite.

I hear you calling me.

    The mercury had slunk right out of sight ;

    I dressed and wandered forth with book and light,

    Returned, I well remember, with my face

        One huge frost-bite,

    And hair and beard snow-white.

This routine was now continued until the end of July, and we were thus able not only to study the

weather conditions for these months throughout the whole twenty-four hours, but we were also able to keep continuous serial observations on the auroras. The Antarctic Aurora as a rule is a poor show when compared with its fellow in the north, and after the colourless displays of Cape Royds, when a livid green was the prevalent hue, and was only occasionally relieved by crimson tips at the bottom of the filaments, I was beginning to wonder whether an aurora worth the name was ever to be seen in the south.

Extracts from the Voyages of Wilkes and Dumont d'Urville along the coasts farther to the west, however, certainly had suggested that here, on the northern rim of the continent and comparatively close to the Magnetic Pole, more beautiful displays might well be looked for, and we soon had reason to know that their accounts were not exaggerated.

Night after night and hour after hour during the winter we were treated to displays which cannot have fallen far short of the far-famed Aurora Borealis. Green and a deep golden yellow were again the most prominent features of the displays, but they were vivid in the extreme, and were frequently accompanied by other colours, amongst which a rich crimson and violet were the most prominent. The aurora is a thing that is as difficult to describe as it is impossible to sketch or photograph the pulsating filaments which are its chief beauty, but it leaves a lasting impression on the mind, and a winter Antarctic night such as that described below is a memory to be treasured for ever.

"We have had bright moonlight continually during the night-time for the last week, and to-night was as fine as ever. Surely there are few countries in the world where Nature can be more beautiful than in the Antarctic, if also there are none where she can be more hard and unyielding. Imagine a perfectly still evening with forty degrees of frost, the air perfectly dry, and

a brilliant moon surrounded by a halo in which the colours of a rainbow are represented twice over, and which shows up perfectly clearly against an indigo sky, while the light of the moon is doubled by the reflection from every point of every ice and snow crystal.

“At first the moon has no rival, but suddenly from the north an aurora, green, gold, and crimson-tipped, flashes up and rushes across to the zenith at terrific speed. As its head reaches the zenith its tail appears above the horizon, and the spiral-form partial arch winds its way towards the S.E., where it disappears behind Cape Adare at a place where searchlight beams radiate high into the sky. It has come, passed, and gone in a few seconds, leaving, however, a vivid impression on the mind of the observer. Hardly has it disappeared when an auroral ring suddenly appears in the south and moves swiftly to the eastward, disappearing in its turn behind the black mass of the cape, and scarcely has this last display ceased when arch after arch leaps across the heavens from the N. and N.W. towards the E., and then fades away, breaks up into individual curtains, or is lost to view behind the cape ; and the moon once more reigns supreme.

“As the temperature falls a fleecy pall of hair-like clouds spreads over the western half of the sky and out from Cape Adare, and these add much to the beauty of the scene, forming a thin veil on which the rays of the moon create the most delicate opalescent tints ; but this veiling of the sky heralds the approach of a thin breeze which seems to penetrate to the very marrow of one’s bones, and counsels a speedy return to the hut, where there remains much work to be done before the meteorologist can turn in with a clear conscience.”

The sea ice which formed after the gale which I have just described in this chapter was destined to remain with us throughout the winter, which was unusually

calm, and in a few days we were therefore once more able to extend the scope of our walks considerably. These excursions under the clear winter sky with the aurora developed so beautifully are amongst the happiest memories of the winter. Our walks during these weeks usually had some objective, and were pretty well divided between trips north and south along the coast of the cape with the object of examining the rocks and the ice-foot, and excursions to the various bergs stranded on the shoal of the beach. It was usual for us on these latter trips to take magnesium powder with us in order to photograph some of the beautiful caves which penetrated the more weather-beaten of these bergs, and this practice was responsible for one of the few accidents which added variety to what was never a monotonous life.

The first berg we examined was one stranded a few hundred yards west of the Spit, and the whole of the interior of this berg proved to be one huge chamber with several outlets. It was one of the most magnificent sights I have ever seen, even outrivalling one's youthful ideas of what a fairy palace must have been like. From inside we could see through three entrances of the cave at once, and each of these gave on to a portion of the sky which was a most delicate violet colour and which blended very harmoniously with the deep blue of the recesses of the ice-cave itself. The cave must have measured fully 20 yards by 15 yards, and one of the shafts was 40 feet high at least, and the whole scene was obviously an ideal subject for experiments with magnesium light.

We therefore returned to the berg as soon afterwards as possible with cameras, placed a pan of magnesium powder with a fuse attached in a good position, and rigged up the camera stands. When everything was ready I touched off the fuse attached to the powder, but as nothing happened for some time I went to see





SPRAY ICE TAPESTRY LINING A ROCK CAVE.







THE CAVE-BERG.

what had happened. Just as I leaned over the pan to examine the fuse closely the whole show went off in my face, burning it badly, singing off my eyelids and eyelashes, and blinding me temporarily. As soon as I could see partially, which was not for some time, we managed to make our way back over the sea ice to the hut, and when we got into the damper atmosphere of the hut the pain from my burned face, which had eased somewhat outside, became simply maddening. Levick, however, dressed the face with boracine, and gave me a mixture of drugs to remove the pain, and in a few minutes no trace of the accident remained except the scars. The day I was confined to the hut, too, was not by any means wasted, for by this time my arrears of darning were very considerable, and one or two pairs of boots required soleing.

We seemed to have an appropriate song for everything that could happen here. As I was bending over my last that evening, Browning, without malice aforethought, I believe, started the gramophone concert with his favourite record, "The Promise of Life." The opening sentence, "There are no eyes whose light hath ne'er been blinded by silent tears of sorrow or of pain," was obviously very appropriate, and amused us all, though I was obliged to call Levick to witness before the others would believe my assertion that the tears I had shed that morning were "silent."

This accident naturally postponed the photographing of the berg, but a day or two later we again made the attempt, this time with more success, and it was during this excursion that we saw the finest aurora of the winter, one which tallied in every respect with those so well described by Nansen and other Antarctic explorers.

"The aurora to-day, though not so large in extent as some I have seen, was magnificently coloured, all the colours of the spectrum being represented

except blue, while several compound colours were present, of which the most noticeable were lilac, purple, pink, and a bright golden green. These changed with inconceivable rapidity, melting into each other almost imperceptibly, and not only the lower portions of the filaments, but whole curtains, were often a brilliant deep crimson, rose pink, or violet, while frequently a large portion of an arch would appear as a chequered pattern of brilliant green and gold, and red or pink. It might truly be called an opalescent aurora. This display lasted only ten minutes, when the aurora returned to its usual colour of green with a little red at the base of the filaments, and although even then unusually fine it appeared tame by comparison."







THE ADMIRALTY RANGE.



THE ICEFOOT AT CAPE ADARE.

To face p. 101.

## CHAPTER VII

### MIDWINTER AND PREPARATIONS FOR SLEDGING

Books—Chess and bezique—Boxing in below zero temperature—Browning's illness—Loss of instruments through wind—Potatoes in our washing and biscuits in our beds—Midwinter dinner—Frozen champagne—Sledging preparations—Harnesses—Food-bags and food—Individual ideas encouraged—Reading Antarctic literature—Our sledge rations—The cookers—A packed sledge.

THE beginning of June saw us all settled down under the new routine with the night watch, and the only difference the latter made was an increasing desire on my part to stay in bed and make up the lost hour or two's sleep in the morning instead of rising for breakfast. The time passed quite quickly, and all through the winter there was no lack of work to keep our mornings and afternoons occupied, and a variety of amusements wiled away the time after tea. We had a good library with us, as usual, and it is at such times as this that one finds time to read classical books. For my part I find it quite difficult to make time to read and enjoy such authors as Scott, Dickens, and Thackeray, at home, but in the course of two winters in the Antarctic I read through the complete works of all three and many more standard books which are far heavier reading than these. One book which proved a great favourite with the men was Marcus Clark's "For the Term of his Natural Life," and their comments on this were very pithily summed up by Abbott when he said, referring to the hero, "The only bit of

luck the poor fellow ever had was when he got drowned"—a trenchant summary that would be hard to beat.

Games, on the other hand, were never very popular amongst us, though Campbell and Levick occasionally matched each other at chess, and a Sunday game of bezique between Browning and Dickason rose to the dignity of a weekly fixture, the result of which was watched with interest by more than the players themselves. Abbott was usually partial to more strenuous exercise, and retired to the old Southern Cross hut every day after tea, when he went through a table of Swedish exercises by the light of a guttering candle. When I could spare time from my observations and notes I used sometimes to join him there, and then the programme was more varied. We had brought a punching-ball with us from the *Terra Nova*, and for some time this afforded us quite a lot of exercise, but so soon as the temperature fell the rubber of the ball became brittle and useless and a puncture soon followed. It was no use attempting to mend this, and so we did the next best thing. The ball was stuffed with seaweed from the Gibson Quilting, and though it was very lifeless it was still of some use. We also fixed up a set of boxing-gloves from woollen mits, padded with the seaweed from the quilting and sewn outside other mits, into which the hand was thrust, and we had several bouts with these during the winter. Unfortunately, the wool of which the mits were made was very harsh, and a blow on the nose would remove a good deal of skin, causing abrasions which did not add to my comfort when taking the meteorological observations in a breeze.

It must have been a queer sight to see two men stripped to their singlets sparring in this old deserted hut by the light of two or three candle-ends, which were scattered about on convenient prominences. The

chief memory that it leaves with me is the sense of amazement and injury at the number of corners that the hut possessed. The temperature must have been well below zero, and clouds of vapour arose as our bodies became heated, so that at the end of a three-minutes' round neither of us could see the other. We were then obliged to call time and lean against the edges of the bunks which lined the hut until the atmosphere was clear enough to enable us to have some chance of knowing what we were going to hit. On more than one occasion I have seen what I thought to be Abbott's face looming through the fog, and, being glad to see it unguarded for once in a while, have hit out and made good my blow, to feel my fist fetch up against the door, or against one of the supporting posts of the bunks with a jar which was proof enough that I was taking my instructor's advice and putting my weight behind the blow. In spite of the unfavourable circumstances, however, we spent several very strenuous and satisfying afternoons in this way, and they were only brought to a stop by increasing pressure of work.

On June 15th we had rather a shock when Browning walked into the hut, informed us that he did not feel well, and then promptly fainted. He was at once put to bed, and we arranged the watch so as to give him an all-night-in, and the next day he was to all appearances quite well again. His illness was actually due to a mild attack of charcoal poisoning, for he had been working in Borchgrevink's hut all day, and he said that once or twice the candles he was using went out of their own accord and he had to relight them. The fumes which caused the trouble were generated during the burning of the charcoal fire with which the hut was warmed while it was being used for work, and, though he knew that something was wrong, he unfortunately only opened the door to improve the air

and left the window shut. As the weather was absolutely calm, the interchange of air was not very quick, and he did not know enough to clear out in time. It was very fortunate that he did get out before fainting, for he might easily have died in there without our knowing anything about it.

With one or two exceptions the months of June and July were entirely free from wind, and this was the more fortunate as the night watchman's post would have been unenviable in the extreme had he had bad blizzards to contend with. As it was we had one breeze on the 19th of June which was fairly up to standard, and once more the post of meteorologist bristled with thorns. The gale commenced actually while Campbell was taking the observations, and his fingers were so benumbed that he was unlucky enough to break the maximum thermometer. He had not been prepared for wind, and had gone out without his wind-proof helmet or any fur mits, and so his nose and fingers were badly frost-bitten and he did not know exactly what he was doing with the instruments. This was not the first time that instruments had been broken in this manner, for I had myself broken a maximum thermometer, and Browning had disposed of a minimum thermometer under similar circumstances. The wind continued during my 2 a.m. to 4 a.m. watch, and I had a very cold time, while everything in the larder that could fall off the shelves did fall off. A tin of dried potatoes fell into Browning's washing, two dishes containing respectively cheese and biscuits fell all over Dickason's bed, and while I was trying to adjust the confusion I was struck in the neck by the greater part of a five-pound plum-pudding. The temperature when I turned in was  $+ 13^{\circ}$  F., and between 4 and 6 a.m. the fire went out and the temperature went down to  $+ 9^{\circ}$  F. Luckily, the hut was creaking and groaning so much that I was able to pace up and down without







FROZEN CHAMPAGNE.

To face p. 105.

disturbing any one. Several pieces of weather-boarding were stripped from the windward side of the hut during this blow, and we were obliged to mend the gap with spare match-boarding.

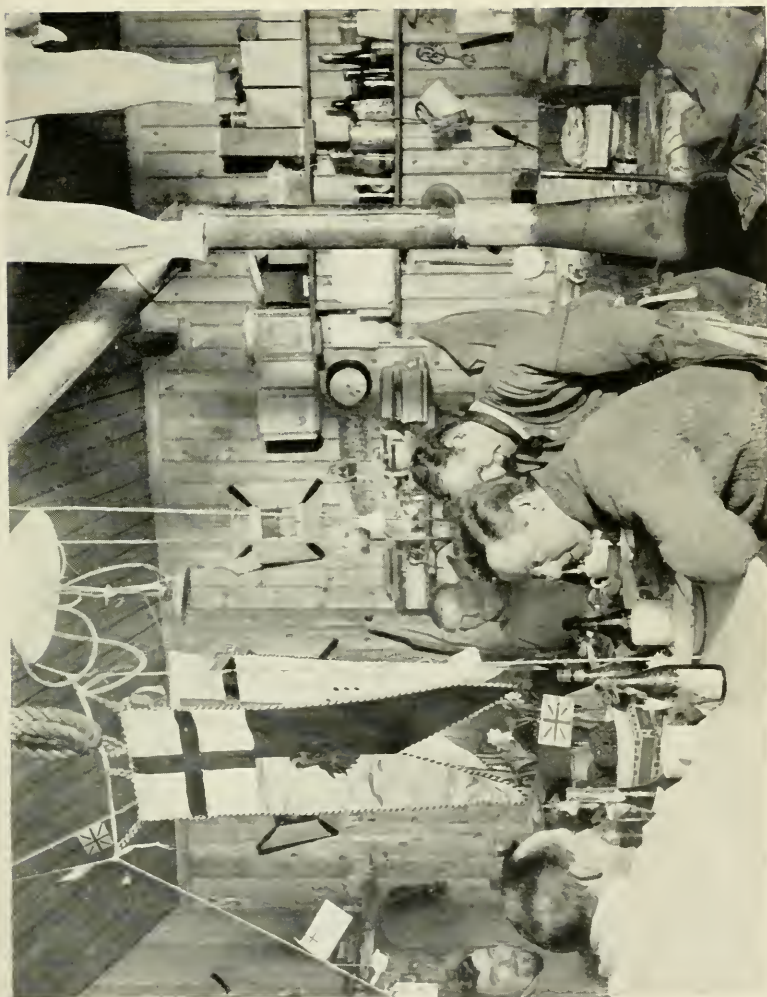
The great festive occasion of the Antarctic is Midwinter Day. Christmas Day is also celebrated to a certain extent, but as this comes in the middle of the summer and the parties are usually away sledging, it is seldom that we are able to do justice to this season, and so the Midwinter Day festival has to a certain extent replaced it. Several days before the occasion signs of its approach were visible everywhere. The various parcels which had been sent for us by friends from home were opened and examined, a menu had been prepared and the menu-cards drawn out by Campbell, decorations had been fixed up, and finally our little stock of champagne had been examined. Alcohol has long been recognized to be worse than useless as a sledging ration in cold climates, but expeditions still usually carry a little in different forms for use on festive occasions such as the present, and we were no exception to the rule. The occasions when the Northern Party broke the rule of total abstinence, which we usually followed, were : Midwinter Day and birthdays, when a liberal allowance was served out to each man, and Saturdays, when the naval health "Sweethearts and Wives" was drunk in a glass of sherry or port.

When Midwinter Day arrived it was declared a holiday, and was celebrated in the evening by a most successful dinner, followed by a more or less musical evening, when every one was obliged to sing at least one song, and it was on this occasion that Campbell for the first time was persuaded to sing the verse from "The Buffalo Battery," which we shall always associate with him in future and which was a feature at all our sledging concerts.

After dinner we took photographs of the party and the dinner-table, and then gambled for the lids of the cracker-boxes because of the pictures on them. A bran-tub, which I believe was presented by Lady Scott, proved to be useful as well as amusing, for we had none too many pencils and no paints and crayons, and all three of these were amongst the gifts. The meteorological bureau, in particular, which had suffered much in this respect from the absence of mind of the lay observers, was very grateful for this addition to its resources ; while Browning drew a paint-box, which was useful to all our amateur artists, and there were sweets enough to keep us all satisfied for weeks.

As soon as this red-letter day in our calendar was passed all our minds were directed towards the making of plans and preparations for next season's sledging, which it was proposed to commence as soon as the men came back. Harnesses had to be made, sledges examined, food-bags made, and the food weighed out and bagged. These operations took most of our time and kept us all pretty busy during the next month.

Besides these general preparations there were, of course, a number of details which needed to be attended to in each man's personal gear, and most of us had ideas which we thought would be improvements on the ordinary sledging equipment. It is by allowing each man to carry out any ideas which do not involve any too radical change that a sledging equipment gradually becomes improved. It is very instructive to see a team at the beginning of the season and note the many differences in the individual ideas of what is most practical, and then to see the same party at the close of a long sledging season and see the way the men have all fallen into line in most essential points. Those alterations which were improvements have stood the test of time and have been incorporated into the general



MIDWINTER-DAY DINNER.









A TRIP ON A PIECE OF PANCAKE ICE.



THE NOSE-GUARD IN USE.

sledging equipment, and those which were unpractical have been eliminated, and so each expedition hands on either through its literature or its men the sum total of all previous experience to the wayfarers who follow it.

A very typical example of the sporadic changes of which I have been speaking was seen in the early days of our preparations on this occasion. Abbott, Levick, Dickason, and, to a lesser extent, Campbell, all suffered from delicate noses, and one day in June Abbott, who had been sewing quietly in his cubicle for some hours, appeared in a helmet with a little strip of cloth sewn across so that it passed beneath his eyes and covered his cheeks and nose. At first he had this visor sewn down at both ends, but at my suggestion he unpicked one end and arranged it so that it could be buttoned over or back from the face as he required. This noseguard proved so satisfactory that it became an ordinary article of wear during the spring sledging which followed. I have no doubt that so simple a device has often been used before, but it is a significant fact that we did not know it, and it shows how advisable it is that each expedition should place on record in some publication, not necessarily in the popular narrative, a description for the benefit of its successors of all equipment used and improvements adopted.

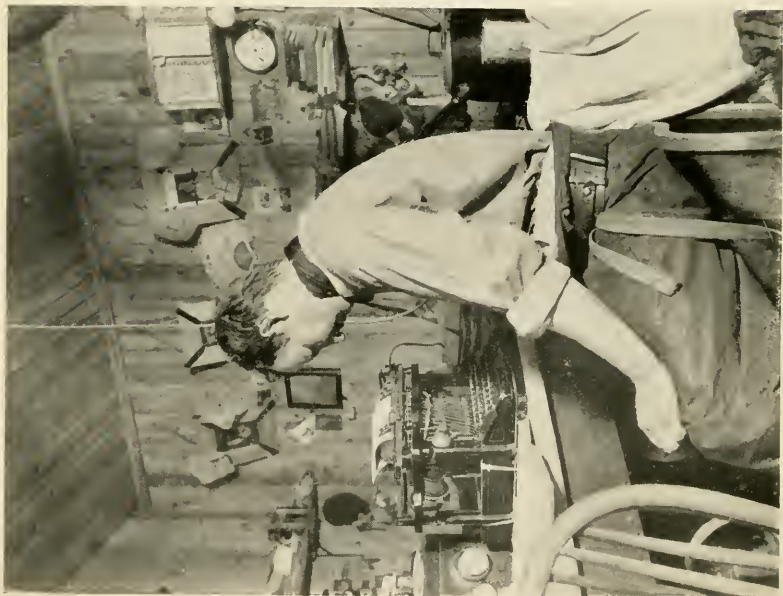
Perhaps the first sign of the near approach of the sledging season is the diligence with which officers and men may be seen reading up what Antarctic and Arctic literature is available. Unfortunately, as we were a subsidiary party, our library was very ill-supplied in this respect, but even so we managed to extract a good deal of useful information from those books we had. The "Antarctic Manual," for instance, contained copious extracts from the voyages of Wilkes and D'Urville, who had cruised to the west of us, as well

as those of many others whose scene of action did not lie so close. I do not think I ever realized what a great deal Antarctic exploration owed to such firms as Messrs. Enderby and to the men sent out by them in command of their whalers until, before the commencement of the sledging season in 1908, I read the journals of John Biscoe and Balleny, whose accounts are as clear and concise as their voyages were well carried out. It is only to be regretted that the commercial outcome of these voyages was not such as to encourage a persistence in them.

Soon after the beginning of July, Abbott and Browning were switched on to making the man-harness and preparing the sledge for our first trial trips, and in a few days these were all finished and we were able to turn our attention to the preparing and weighing out of the food. The harness we used was modelled closely on that used by the Shackleton Expedition 1907-9, and consisted of a broad waistband of doubled canvas, pierced at the back and fitted with an eye through which passed the trace of Alpine rope. All the weight was taken by this waistband, but the harness was suspended from the shoulders by light canvas and leather shoulder-straps attached to buckles fixed in the main belt. The trace was finished off with a stout eye, which fastened round a toggle at the end of the main sledge trace. As most of our work was likely to be in crevassed country, both the canvas belt and the trace were reinforced with a second loop and trace of Alpine rope.

The ration adopted during the sledge journeys we made from Cape Adare was based in the main on the Shackleton ration as modified by Professor David's party on their journey to the Magnetic Pole, and it proved quite satisfactory. The ration per day was as follows :—





WRITING UP ARREARS OF NOTES,



AN AFTERNOON'S SEWING.



## CAMPBELL COAST SLEDGING RATION.

Biscuit	...	...	...	...	...	16	oz.
Pemmican	...	...	...	...	...	8	oz.
Cheese	...	...	...	...	...	1'5	oz.
Raisins	...	...	...	...	...	1'5	oz.
Chocolate	...	...	...	...	...	2'14	oz.
Sugar	...	...	...	...	...	3'14	oz.
Powdered biscuit	...	...	...	...	...	1'14	oz.
Cocoa	...	...	...	...	...	7	oz.
A little tea, salt, and pepper							<hr/>
							34'1 oz.

This ration differs from that used by the Southern Party on the barrier and the plateau through an increase of biscuit and a decrease of pemmican, and this change was carried out because we might always expect to be able to procure meat while sledging along the coast, and this meat could be used to eke out our supply of pemmican.

Once the ration was decided on it proved quite a short job to prepare the fortnight's provision considered advisable for our initial trip, and the only thing that took time was the powdering of the biscuits. We first attempted to do this by pulverizing them with geological hammers in a venesta-case, but this method though very thorough was even more slow, and we finally resorted to the mincing-machine. This proved to stand the strain remarkably well, and churned up small pieces of biscuit almost as well as it did meat, and with fair speed. I had heard very unfavourable reports of the hardness and unpalatability of our sledging biscuits, and so took this opportunity of tasting both Antarctic and Emergency biscuits, and was agreeably surprised to find that, although the reports about their hardness were not much exaggerated, they were certainly quite pleasant to taste. Later on we were to count their hardness as one of their greatest attributes, but that time was not yet, and during the present season I think most of us would have preferred them to be somewhat softer.

The cooking apparatus used on the Scott Expedition did not differ essentially from that used by the other English expeditions, and was the latest adaptation of the Nansen cooker. This consists of five parts—a shallow dish, in which the primus lamp stands ; the two pots in which the water is heated and the meals cooked, one of which is of ring shape and fits around the other ; a lid of thin sheet aluminium which covers these two ; and, finally, an outer cover, which is lowered gently over the whole concern in order to keep in as much of the heat of the lamp as possible. The whole apparatus is made of aluminium, and when it is carried on the sledge the parts fit into one another and the big lid covers all.

Inside the inner cooker are carried the four double mugs, each of which is the property of one man and is marked with his initials. These mugs consist of two portions, one of which fits over the other and serves to hold the pemmican, while the inner one is used for cocoa or tea. The spoons and tea-strainer, which are the only other implements we use, are stowed in the outer ring-cooker.

When everything was ready a few days before we were due to start the sledge was carried down to the icefoot and packed, so that we should have a better idea whether we had left anything essential out of the equipment ; and the description of such a sledge-load may not come amiss here.

Across the bows of the sledge is fixed an oblong box, made of some light but strong material, and this is divided into two unequal compartments. In one of these is kept the primus lamp and its spare parts, and in the other are stored all delicate instruments, such as theodolites, cameras, etc., and also the matches and the spirit for lighting the primus.

This box remains permanently lashed to the sledge framework ; its top is fitted with chocks, into which the bottom of the cooker fits loosely, and the cooker

is secured down to the box by a canvas band made to slip round and over it.

Behind these two comes a large green canvas tank, which is also fixed to the frame of the sledge and

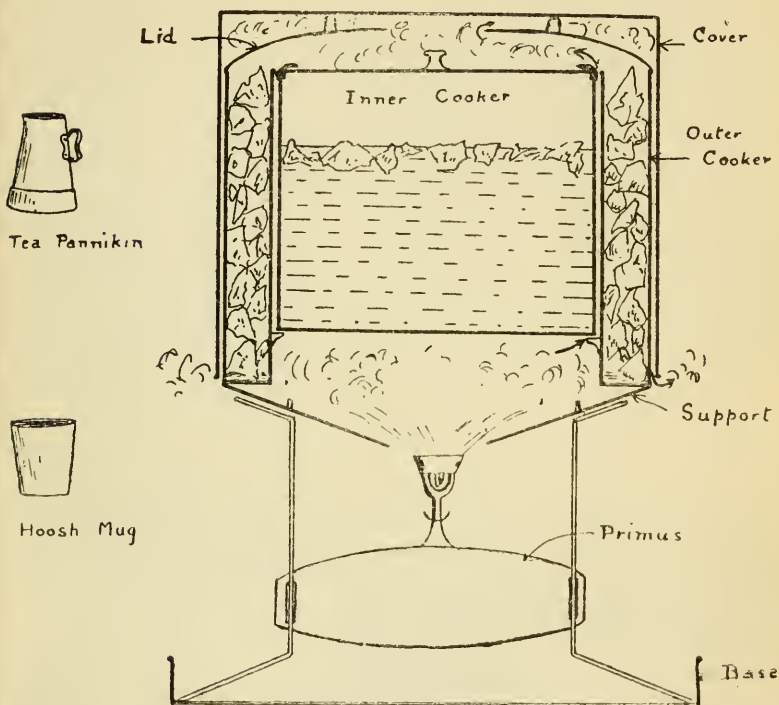


DIAGRAM OF SLEDGING COOKER AND MUGS.

which is filled with bags of food, and behind this again are lashed two long biscuit tins, each containing 42 lb. of sledging biscuit, and thus each being a fortnight's ration for three men. These lie fore and aft along the sledge, and are lashed together with light line. Above these boxes comes another green

canvas tank, containing the boatswain's bag or repair outfit and the small linen bags holding the 10 lb. of spare clothing which each man is allowed to carry. In the rear of these is secured another light wooden tray, into which is lashed the oil ration of the party, carried in gallon tins.

The food also is all arranged in linen bags, each containing a week's ration for the unit of three or four men who compose the party, and the week's food that we are working on is carried in a smaller bag of green canvas, which is called the weekly food-bag. This, the tent and tent-poles, and the shovel and ice-axes which are used in making camps are stowed on top of all the other things in such a manner as to make the load as even in height as possible, and so that they are readily accessible at camping-time. It is very essential to distribute the more weighty portion of the load as evenly as possible over the middle portion of the sledge, and this is done by keeping the food, which is the most compact portion of our load, as much in the centre as possible. In a geological sledge trip such as most of ours were the food-bags as they are emptied are used for packing specimens, and the bags are then replaced in the canvas food-tank, thus keeping the major portion of the weight still in the same place.

The sun was due to return to us on July 28th, and Campbell decided that we should leave on our trial trip to the back of Robertson Bay the next day. Abbott and myself were to accompany him, and it was intended that we should be away for four days, so I spent the last few days at the cape coaching Browning, who would be obliged to run the meteorological observations during the next week, and also at any other times that I might be away from the hut.

Another thing that took up a good deal of my time during these days was the making of a sledge-flag. Each member of a party carries with him as a rule



AN ICEBERG FROZEN IN NEAR OUR WINTER QUARTERS.



A LESSON IN GEOLOGY.





one of these small silk flags, which he flies on any special occasion, and which is the only non-utilitarian article of our outfit. As I had joined the expedition at the last moment, I had not had one made at home, but, resolving not to be outdone, I borrowed a white silk handkerchief from Levick, cut it in two, sewed the two halves together, and then trimmed it to the correct shape. The St. George's Cross was then made out of two pieces of bright red braid off some dog-coats we found in Borchgrevink's hut, and the flag looked quite respectable from a distance. It looked so nice, in fact, that I decided not to risk spoiling it by adding either motto or design. Close examination of the flag shows that some of the stitches look very much as if they had not been sewn but had been bitten on, but my excuse must be that the light was very bad at the time I was doing it and that I had been busy all day working out the proportions of the food and weighing it up.

As the sun approached closer and closer during these last few days before his return the sky was just as if a perpetual sunrise and sunset were going on during the whole of those hours we were abroad. For days the weather remained perfectly calm and clear, without a cloud in the sky, and the whole horizon was bathed in glorious colour. To the S., S.E., and S.W. purple, pink, and deep blue bands were underlain by the purple-black band of the shadow of Cape Adare, while from N. to N.W. and N.E. broad bands of crimson, yellow, and green, fading finally into the blue of the upper sky, were present all day, waning in intensity in the evening, it is true, but at the same time becoming infinitely more delicate in shade.

The pink flush to the southward must have reached on some mornings to within forty degrees of the zenith, and at last towards midday the tops of the Admiralty ranges were flushed to a glorious rose-pink by direct sunlight.

On the 26th of July Abbott drew my attention to the opening of water-holes in the sea ice to the north of the beach, and I walked out the same day to examine them. They proved to be local patches immediately to the westward of small stranded bergs and were quite insignificant, though huge rolls of cumulus cloud low down on the northern horizon suggested the occurrence of the same phenomenon in that direction on a much larger scale. At the time this disturbance of the sea ice did not cause us any uneasiness, though later on the same thing was to prevent any long sledge journeys and confine our field of operations to Robertson Bay itself.

On the 27th I walked some eight miles south of the beach on the track we should follow with the sledge a day or two later, and even then it was evident that the surface would be about as bad for a sledge as it was possible to be. At a point of Cape Adare six miles to the south I came across the carcass of an old bull crab-eater, which must have died within the last three months, a possible cause of death being indicated by a swelling in the throat. The walk proved to me that I was in pretty good condition to start sledging, but I was wet through with perspiration by the time I had returned to the hut, and was very glad I had not to turn straight into a sleeping-bag, but was able to have a rub-down and a change of clothes. There was no doubt that this walk, by removing some of the effects of the winter's idleness, added very much to my comfort during the next week's sledging.

## CHAPTER VIII

### SPRING SLEDGING

Spring sledging routine—Making camp—Cooking the evening meal—Trials of a sledging cook—Serving out—A capsize—Black cookers suggested as an improvement—Turning in—Hair inside *versus* hair outside?—Getting up—The morning meal—Our start on July 29th—Bad going—The salt desert—Duke of York Island—An unpleasant episode—Lost! a salt bag—The rookery on the island—The blizzard—Our tent blown from over our heads—Aurora Frigidissima—Back at the hut.

As soon as the sun returns our spring sledging season opens, and it is then that the Polar explorer's lot for the first time becomes a really unenviable one. Our equipment is now so near perfection that the winter under normal circumstances no longer holds any terrors for us, and a party will usually finish the long night in every bit as good condition as when they started it.

It is far different, however, with sledging in the winter or spring, and I know of no other experience that will take as much out of a body of men in as short a time as will these journeys.

Perhaps a better idea of the manifold discomforts of sledging at low temperature may be gathered from the following description of a day's routine during such a journey. Let us suppose that the party are just swinging along in the last few minutes of the day's march while the leader looks from side to side for a likely camping-place. The team is going well, and, although tired, all the men are happy because they are working to their utmost ability and are therefore warm.

Only two things are required of a good camping site : there must be a flat or comparatively flat space large enough to take the tent comfortably, and sufficient snow must be available to pile on the skirting of the tent to keep it from being blown over and away by any ordinary gale. These two essentials are usually soon found, though on glaciers or sea ice swept by continual gales parties have sometimes had to march for as much as two or three hours beyond the routine time before they found enough snow to ensure the safety of their camp, and occasionally they have had to make shift without it.

As soon as the leader sees a suitable spot he shouts, "Camp-oh !" the team stop as one man, slip out of their harness, leaving the traces to lie where they have fallen, and proceed to unstrap the lashings of the sledge.

The tent, tent-poles, and shovel are always carried on the top of the load, and the straps are loosened and these are removed, while, if a wind is blowing, the straps are then loosely fastened up again. The tent-poles are then set up on the place selected, each man of the party of three takes two of the legs, and at a given signal all bear down on the poles and drive them several inches into the snow of the drift. Should the drift be too hard an ice-axe is requisitioned, and while two of the men hold the tent-poles, the third chips a hole for each leg to sink into. The floorcloth of the tent is then spread in the space between the poles, and one man takes his stand on this and holds down the poles while his two companions fetch the tent, carry it to the leeward side of the camp, and unfold it. If there is any wind the tent is then allowed to open out and the wind is used to distend it, when the windward side is lifted over the cap of the poles and drawn down until it reaches the ground. While one man then holds on to as much as possible of the tent to windward, the

other fetches the shovel and cuts out blocks of hard snow from the drift to pile on the skirting. A few blocks are thus piled opposite to each pole of the tent, and then the second man is able to leave his comrade to complete the wall of snow which is to protect the tent from blizzards, and is able to get the cooker and prepare it for filling with snow. In a well-set tent there should not be a single portion of the skirting showing when the fortification is complete ; for, as some of us know to our cost, the blizzard will find out any such spot and will use it as a lever to work its way under and into the tent, filling the interior with a thick powdery drift which covers everything, and perhaps finally tearing up the skirting altogether and exposing the sleepers inside to the full fury of the blast.

The cook, who up till now has had to hold the poles steady from the inside of the tent, is now free and is able to take the primus and spirit and proceed with his own job. He first of all takes the lamp and stands it in the bottom of the aluminium cooker which is provided for the purpose, and this is then placed in as level a place and as near the middle of the tent as possible.

He then pours a little methylated spirit into the small cup which surrounds the burner, takes the box of matches from his breast pocket, and carefully lights the spirit. When this has almost burnt out he screws up the air-valve and gives one tentative pump, and this is the crucial moment. Should the oil in the pipes not be heated enough, pure oil will come through with the rush of air and bright, yellow flames may arise two or three feet into the air. To avoid any chance of a conflagration he must now unscrew the valve and let all the air out of the body of the pump, and all his work must be done again. If, however, he has not been impatient and has waited until the pipes are heated sufficiently, a mixture of oil vapour and air will come



rushing up and spurts of blue flame will start out from under the cap of the burner. He has then nothing to do but increase the air pressure, and soon the burner is surrounded by a halo of intensely hot, bluish flame, and the tent resounds with the cheery hum of the primus.

Before this time the men outside have filled the cookers with ice or snow, and these are passed in directly the cook is ready for them, and in a few minutes the tent is full of the vapour from the warming snow and water.

This dense cloud of vapour is one of the most exasperating of all the troubles with which the cook has to contend, and when this is superimposed, as it is in early spring sledging, on the darkness of approaching night it is impossible for him to see what he is doing at all even by the help of a candle, and the result is confusion for the first few days of the journey, until his routine has become habit and he is able to tell by touch what it is he has under his hand.

The position of cook bristles with thorns during the winter and spring, and those of us who have had experience at both kinds of work much prefer the outdoor work even in bad weather. For one thing, the outside duties end once the tent has been snowed up and the sledges have been properly secured, and though shovel-burns are frequent, they are nothing to the quantity of burns and frost-bites that the unfortunate cook sustains while he is handling the primus and cooker inside the tent. Towards the end of the journey his fingers become more or less callous to these discomforts, but before this comes about the number of burns can be pretty well gauged by the state of his temper, and it is not a wise thing to pass witticisms at his expense—at any rate, before he has finished his first mug of “hoosh.”

Both the inner and the outer cooker have been filled



with snow and ice, the latter for preference if attainable, and as soon as the cook judges that this is melted down he cautiously lifts off the outer cover, removes the lid from the inner cooker, and increases or reduces the amount of water in the latter until he thinks that enough is left to make the required number of pint mugs. Then he adds the pemmican and powdered biscuit, and replaces the lid and outer cover. An inexperienced cook is very likely to misjudge the necessary amount both of food and water, but it is remarkable to what a degree of accuracy in this respect one can attain after long practice. The primus is then pumped up till it is burning full blast, and in a few minutes a smell of pemmican pervades the tent. This is another critical point, and unless the cook is quick in reducing the flame of the lamp some of the precious food is likely to boil over and be lost, when, if the party has been long away from its base, he will be a very unpopular man.

After the pot has been emptied and scraped clean by the cook, who takes the last scrapings as his perquisite, the water for the cocoa is poured from the outer cooker to the inner cooker, and, if necessary, a little snow is added to the former to prevent it from overheating. The primus is then pumped up again and the covers replaced, and the cook is at liberty to start on his own hoosh, which has been gradually cooling off. Here again the advantage of experience is seen, for the tenderfoot cook will be in such a hurry to get at his hoosh that he is quite likely to let the outer cover fall instead of lowering it gradually, and the draught produced in this way invariably puts the flame of the primus out.

On one or two occasions the cook has been so unfortunate as to drop the hoosh-pot and upset the pemmican when he was serving out, and this is a catastrophe which ranks in the minds of a sledging party with the fall of empires. The cook himself, if he has received

any portion of the deluge, is carefully scraped, and from the floorcloth the mixture of pemmican, crumbs, and reindeer hairs is collected with spoons and sheath-knives, so that, if anything, the amount of pemmican is increased rather than decreased. One cannot get over the fact, however, that all the heat of the meal is lost, and the flavour of the hoosh is certainly never improved by these drastic measures.

After the cocoa has been served out the cooker is passed outside and filled ready for the next morning's breakfast, and is then placed on the skirting of the tent to one side of the door, and the weekly food-bag is stowed on top of it to prevent its removal by a playful blizzard.

I should like here to make a suggestion intended to be taken seriously by future expeditions, and that is that the outer cover of the aluminium cooker should in future be painted *black*. The sun would then exert its maximum influence on the cooker whenever it is in the outer air, and in the summer especially the ice or snow for the next meal could be carried in the cooker on the march and would be found to be already melted by the time of the next halt. In this way a considerable amount of economy of fuel would be secured, and if sledge parties must have drinks on the march, a habit with which I am not in sympathy, they could obtain the water in this way rather than by melting more than they require at the previous meal.

No time is now wasted before turning in, for long before the conclusion of the meal all the party are shivering from the effect of the clothes wet through with perspiration during the march. While two of the party look to the securing of the sledges and add a final shovelful or two of snow to the tent skirting, the other takes the whisk or his fur mits and brushes the frozen vapour from the walls of the tent and cleans the floorcloth. The bags are then passed in to him, the

other two join him inside, and the tent door is finally closed.

The sleeping-bags are then unrolled, and each man sits on his own bag and proceeds to change his socks and boots and remove his wind-clothes. Both the socks and the finneskoe we have been wearing during the march are wet through with perspiration, and the socks are rammed into the breasts of our shirts in order to dry them during the night by the heat of our bodies. The boots meanwhile are hung to the tent-poles near the cap of the tent in order to give them some chance to freeze into the shape of the feet and to prevent them from being lain upon. Woe to the unfortunate neophyte who neglects either of these precautions! If he does his socks will certainly be unwearable the next morning till they have been thawed out on the top of the cooker. Even then they will be supremely uncomfortable for the first hour or two, while it will take him half an hour's hard work with his toes before he will be able to fit his feet into his finneskoe. On two or three occasions this latter misfortune has happened to me, and I could imagine no torture which could surpass it. Not only is the physical agony almost unbearable, but no one's temper is at its best in the early morning, and you have the consciousness that you are keeping all your companions cold and uncomfortable for an extra half-hour, while, unless the party are exceptionally good-natured, the remarks hurled at the delinquent are the reverse of sympathetic.

The first night out sledging, whether in the summer or the spring, is usually a sleepless one, for it is some time before one becomes accustomed to sleeping with one's head inside the bag and without any fresh air to speak of. It is impossible to sleep with the head exposed at temperatures below zero, however, and this is the factor which more than anything else is the cause of much acute discomfort in any spring sledge

journey of moderate length. Each night most of the moisture from every breath condenses to frost inside the mouth of the bag, and in addition to this the perspiration which has soaked the clothes during the hard work of the day is driven gradually out into the bag by the heat of the body during the night, so that day by day the latter becomes heavier with moisture. In the Shackleton Expedition, when we used the reindeer-sleeping-bags with the hair inside, a bag would weigh ten or twenty pounds more at the close of the journey than at the beginning, and the whole of the ice making up the extra weight had to be thawed out and brought to the temperature of the body before it was possible to get any sleep. The consequence was that before the party had been more than a week out they never knew that they had any sleep at all. The nights seemed interminable, and they rose in the morning unrefreshed. They must, of course, have dozed from time to time, but a fortnight under such conditions would play havoc with any man, however strong he might be.

Once such a bag has been seen or felt, it is quite easy to believe the tales that have been told of sleeping-bags which have taken several hours to get into and which have been so hard that it has been impossible to roll them up and stow them away on the sledge. We, fortunately, had no such experience, and this may be attributed to two things, the first being the absence of extremely low temperatures on our journeys, and the second the fact that because the temperatures were higher we were able to use our bags with the hair outside. In this way the hair was exposed to the air all day, and so the moisture which did collect near the opening of the bag had some chance to disperse, while when the ice got too thick on the inside of the bag it was possible by working the skin to break and burst off a good deal.

There has been a good deal of controversy as to the best way of using a sleeping-bag, whether with the

hair on the outside or the inside, and opinions are still divided on this most important subject. My own experience would suggest that on a journey of any length take with the hair side in. Below  $-45^{\circ}$  F. I have had is better to have the skin near one's body. Above  $+15^{\circ}$  F. there is no chance of moisture accumulating inside the bag, and the bag may be worn with advantage with the hair side in. Below  $-45^{\circ}$  F. I have had no experience, but men who have tell me that it is necessary to have the hair side of the bag inside or one cannot keep warm at all.

The morning's routine is, of course, the reverse of that already described. When the word is given to turn out our day clothes are put on and then the bags are rolled up and secured with a lashing specially carried for the purpose. The cook then lights the primus, the cooker is passed in to him from outside, and while he gets the breakfast under way the other two men make any necessary changes in the packing of the sledges and keep themselves warm by stamping up and down or by sparring for a few minutes, using their fur mitts instead of boxing gloves. Here again they have the advantage of the cook, who is compelled to start his struggle with the primus before he has had any opportunity of setting his circulation going vigorously. As soon as there is no fear of their advent extinguishing the primus the door is again untied and they are allowed to take their seats inside, and if things are going well another twenty minutes will see the hoosh ready to be served out and the cocoa take its place in the inner cooker.

While the latter is being drunk a little later, one's boots and socks are changed, and night socks and finneskoe are stowed away in the sleeping-bags. At the conclusion of the meal the tent is struck, everything is stowed on the sledge, and in a few minutes the party is once more under way.



The Northern Party's first experience of spring sledging began at eight o'clock on July 29th, when we left Cape Adare on the way to Duke of York's Island at the back of the bay. The sun had been due to appear above the horizon at noon on the 28th, but owing to the frost-smoke rising from the lanes of open water to the north, we did not see it until we had been out two days, when we were cheered for a few minutes by the sight of it rolling along just above the horizon like a huge red ball.

During this first journey the shortness of the time when enough light was available to make marching possible was perhaps the cause of our most acute discomfort, for the hours we were compelled to spend in our wet bags seemed interminable, and we never slept for more than a quarter of this time. It was inevitable that on a trial trip like this we should find that something had been forgotten, but we had been careful in packing the sledge and the only thing lacking was a dipper for serving out the pemmican. It was when dressing for the march on the second day that we really appreciated the fact that several items of our clothes would need some change before they were adjusted to the needs of spring sledging, and I mention one fact as an example of how when sledging our comfort hangs very much on small details. Our windproof trousers had been made so small in the leg that they could not be drawn on over our finneskoe. The inconvenience of this had already been experienced to a lesser degree in the hut when it had been necessary to take our boots off every time we donned our wind-clothes, but never have the makers of these invaluable garments been cursed so heartily as they were on this particular morning. We would have been well pleased to have sent them spring sledging in a thin suit of summer clothes and tight, patent-leather boots, and then turned on a blizzard.

The surface of the sea ice in the bay proved to be in







DEFECTIVE SLEDGE RUNNERS.



ICICLES WITH SNOWDRIFT TIPS.

the main of the type that I have elsewhere christened "salt-flecked ice," where the ice has been swept clear of snow except for little ripples which have been saturated with brine. This snow is quite the worst surface over which it is possible to have to drag a wooden sledge, and is dreaded justly by travellers on sea ice far more than heavy snow sastrugi, soft snow, or pressure, for the runners will not run over it, and each little ripple of snow acts as if it were armed with suckers and were doing its utmost to bar our progress. It was in consequence of this that it took us three full days to reach Duke of York's Island, which is only eighteen miles from Ridley Beach, where our winter quarters were.

For the first twelve miles we skirted the cliff of Cape Adare closely until just to the north of Warning Glacier we struck out directly towards our objective and across the bay, and here for the only time on the trip we were able to make a decent pace over the snowdrifts which extended out over the sea ice opposite the glacier.

These were only a mile or so broad, however, where we crossed them, and we were soon back on the same infernal surface which had given us so much trouble before, and so were obliged to make our second camp well out on the sea ice and about halfway between the island and the nearest point of the cape. This portion of the bay had been swept by gales blowing from the gap through which the Sir George Newnes Glacier descended from the mountains, and in consequence the only drifts to be found were behind the occasional low pressure ridges, and the snow of these drifts, having been swept across many miles of sea ice, had become saturated with brine, so that the water we obtained from it was undrinkable. We managed to make our pemmican palatable by refraining from adding salt to the mixture, but none of us obtained any satisfaction from

either tea or cocoa, and we were obliged to restrain our thirst until we should reach the island the following evening.

Towards the end of the next day's march we encountered a good deal of pressure-ice much on the same scale as that near Cape Adare, and this caused us some trouble, as the sledge was overturned once or twice. This was, however, by no means the worst of the damage done, for on examining the load after being brought up more suddenly than usual, we found that one of the canvas tanks had been ripped from end to end and the medicine-box was sticking out of the gap, while one of Abbott's spare ski boots had been left a hundred yards in the rear. At the same time we found that the camera legs had fallen down between the bottom planks of the sledge and were smashed to atoms, and it is probable that it was the jagged ends of these legs that had really been the cause of the damage to the clothes-bag, as I think the canvas would have resisted the efforts of any of the ice we had passed over. At least, this was a striking example of the advisability of arming the bottom of our sledges for the main journey with venesta boards as we did in the Shackleton Expedition. The venesta boards are practically indestructible; they can be arranged so that they overlap, and they add very little to the weight of a sledge.

On the evening of this day (July 31st) we arrived at Duke of York Island, and our camp was pitched to leeward of its western point between the rock cliffs of the island and the face of the Dugdale Glacier, which had thrown the sea ice immediately in front of it into considerable disturbance. We must have been very near Borchgrevink's midwinter camp, but we could see no signs of it.

The temperature during the whole trip had remained between  $-20^{\circ}$  F. and  $-30^{\circ}$  F., and, though these temperatures are by no means low for spring sledging,

our bags were beginning to get fairly wet, and we certainly did not enjoy the nights from now on.

The next morning when we rose we were all wet through, and directly we had rolled them up both the head and the foot of our sleeping-bags froze quite hard. The primus also nearly smoked us out at breakfast-time with one of the vilest smells it has ever been my lot to encounter, and that is saying a good deal, while to add to my troubles the pemmican was unusually greasy, and when Campbell and Abbott lighted up their pipes the strong ship's tobacco proved to be the last straw. I have sometimes heard that when men have died from cold they have been found absolutely stripped with their clothes lying all around them, as if their last sensation had been one of intolerable heat. The present feeling of sickness had much the same effect, for when I reached the open air I felt so uncomfortably hot and moist that I was obliged to strip to my vest before I was at all at ease, and this with a temperature of fifty-eight degrees of frost. This is one of the few occasions when I have wished that I had always been a smoker, for while it was impossible to grudge one's companions their smoke, yet ship's tobacco has always been my greatest enemy on a sledge journey, and has on more than one occasion made me lose a meal when there was otherwise no need for it.

We found on the same morning at breakfast that the salt-bag had been mislaid, and the pemmican in consequence was far less agreeable. To any one with a casual acquaintance with three-men tents it would seem impossible that anything the size of a salt-bag should lose itself so completely as this one did. When one has actually lived in such a tent, however, and has seen a meal in progress, with three men sitting on three rolled-up sleeping-bags, a food-bag in front of one, a cooking outfit in front of another, and a lot of miscellaneous clothes lying about, the wonder is that one ever

finds anything one wants. Every time one put down a mit to open a food-bag or to tie it up the mit was sure to disappear through some unconsidered movement, and was always out of the way just when one's fingers began to freeze. The same applied also to our spoons and mugs, and, given a light which is a sort of visible darkness, it is easy to imagine how things were lost and remained lost until the tent was vacated after the meal. This was especially the case because the intense cold of everything made us very chary of looking for missing things without our mits on. It was extremely difficult to tell exactly what we had hold of when we could not see it, and when it was impossible to diagnose its shape from our sense of touch.

After breakfast on this morning the three of us walked round to Crescent Bay to collect a few rocks and get a general view of our surroundings. The island was composed of steeply dipping beds of a hard green quartzite, and was bounded by steep cliffs on most sides. At the back of Crescent Bay the slope was more gradual, and here a large brown patch covered with guano pointed to the fact that either now or at some former time the bay was the site of a small rookery of Adélie penguins. It was at the foot of this brown patch that we later came across the body of an Adélie penguin tied by the leg with a string and stretched out as far towards the sea as he could reach, a mute protest against the criminal forgetfulness which had left the unfortunate bird to die of starvation within sight and sound of the element where all his wants could have been satisfied.

On August 2nd we broke up our camp, repacked our sledge, and started on our return journey to Cape Adare, and as the weather looked threatening we made direct for the nearest part of the cape, a few miles south of Warning Glacier. Here we camped for the night on a slab of smooth sea ice under the cliff. The criss-







THE START FOR THE WEST IN SEPTEMBER 1911.



THE WARNING. DRIFT APPROACHING CAPE ADARE.

To face p. 129.

cross direction of the sastrugi about here was so pronounced that it was difficult to tell from which quarter we were to expect a heavy wind should one rise, while a strong northerly gust which struck us soon after we camped unfortunately influenced us so far that we moved the sledge so that it protected the north side of the tent instead of, as formerly, the south side, where we considered the snow would be sufficient to hold the skirting. Having as we thought made sufficient preparations to guard against a heavy blow either from the south or the north, we turned in and prepared to take as good a night's rest as was possible considering the wet state of our bags.

Soon after we were all quiet and sleep seemed to be within measurable distance, furious gusts began to strike the tent from the E.S.E., and we saw at once that we were not going to escape the blizzard. I was sleeping to windward and a few minutes later I felt the tent beginning to crowd me against Abbott, while it seemed to belly out much more at the top than when the wind first started. It never struck me, however, that anything serious was happening, for I have frequently been in a tent when the drifts have caused it to become so small that three men could not lie together with any degree of comfort, and I could hear the snow lashing the walls of the tent. About half an hour later I had just dozed off when Campbell shouted to us to rouse up, and on opening my bag I saw that the tent was full of drift and that the lee skirting had been lifted clear off the ground and was flapping madly in the air. Even as I took all this in I realized also that the skirting on the weather side, snow and all, was beginning to slide slowly down the piece of ice on which the tent was pitched, and which had become slightly inclined through change in the tide-level. I, therefore scrambled half out of my bag, and after a few seconds' hard work I managed to wedge myself,

bag and all, under the freshly formed drift. This had become quite solid, and thus I managed to prevent the skirting from drawing out any farther. A great deal of damage had been done already, however ; the weather canvas bellied out like a sail until it reached well past the middle of the tent, and owing to the gusty nature of the wind it flapped continually with loud reports, whilst the strain on it in the gusts was so tremendous that the Willesden canvas of which it was made must have been very strong or it would have split. Already the hem of the skirting was some 15 inches off the ground, and it was impossible for me to move from the position in which I had managed to get a good hold of it with my back.

During this time Campbell had been holding the lee skirting, and thus two of us were fully occupied inside the tent and the work outside fell to Abbott's lot. The latter had some difficulty in dressing, for by this stage of the journey all our day clothes froze as soon as we removed them for the evening, but in a few minutes he had forced his way into his frozen wind-clothes and crawled outside.

When he had found the spade, he discovered that he could hardly stand against the wind, and, indeed, on one occasion he was blown down from the weather side of the tent until he brought up against the sledge. He was successful, however, in getting some large blocks of ice to put on the skirting, and was also able by digging away the edge of the weather drifts to pull the canvas out until the tent had again resumed something like its former size. After he had done this I again wedged myself with head and feet against the two weather spaces, but only held the regained ground with partial success.

After Abbott had done the best he could outside we opened the door and during a lull let him in, afterwards taking wind-clothes, fur mits, and notebooks into

our bags and settling down to spend an unpleasant night hanging on to the tent by main force until the wind saw fit to drop. When Abbott was safely in his bag I handed over the care of the portion of the tent I had been wedging with my feet to him, for the tent had already gained a foot of the open floor space, and I had as much as I could do to resist the pressure of that portion near my head and shoulders. He managed to get into a comfortable position at once, comparatively comfortable I mean, and within an hour I heard him snoring. I was not, however, so fortunate myself, but remained awake all night, holding on to the tent with my head, shoulders, and one elbow, and half out of my sleeping-bag most of the time, though, as the temperature was high, and we were working too hard to feel cold, this was rather an advantage than otherwise. Campbell was also awake for most of the night, and as he had split the head of his sleeping-bag in his attempts to get out at the first alarm he also was as uncomfortable as could be wished. About 4 a.m. I changed places with Abbott to ease my cramped muscles, but failed to discover the secret which enabled him to sleep, for I was kept awake by sundry blows on the neck delivered by the flapping canvas.

From five o'clock the wind began to ease up somewhat, and about six we were able to get out and have a look round. Soon afterwards, however, a furious gust struck us, and this was followed by another and another till the gale culminated in a sustained blow at hurricane force, lasting for half an hour at least. After this the wind settled more and more, and we lay down, let go of the tent, and had a rest ; but speaking for myself, I was far too tired to sleep, and so put that off until the next night.

The following day we made a few miles up the coast over execrable surface, but were obliged to camp just south of Warning Glacier, and at this camp we did get a

fair sleep, thanks to the reaction from the night before. Campbell determined then to make an early start the next morning and try to make the whole distance to the hut on the same day. In accordance with this plan he roused us at 5 a.m., when the night was still dark, in order to be on the march by the earliest dawn, and though the air was cold and raw none of us were sorry to leave our sodden sleeping-bags.

I think the coldest thing I ever remember to have seen was the aurora which met our eyes when we tumbled out of our tent that morning to fetch the primus and cooker. It looked absolutely the essence of frigidity, and I know well enough now what I shall mean in the future when I speak of a cold light. A single arch of brilliant greenish-grey, like the curved blade of an immense scimitar flashing in moonlight, stretched across the sky from south to north. It was a typical early morning aurora such as I had often seen when taking the 2 a.m. observations at Cape Adare, but it looked very different when it was seen from a warm overcoat after coming out of a warm hut. This morning it struck me as being simply devilish, and immediately reminded me of two lines of Service's I had read a few weeks before, which suggest that in the north also the aurora makes a similar impression on the mind of the traveller—

And the light of hell fire flows  
Into the bowl of the midnight sky : violet, amber, and rose.

It was some time before we got warm this morning, for we were already fairly chilled before we rose, but we were rather quicker than usual over breakfast, spurred on probably by the thought that with ordinary luck our next meal would be at Cape Adare.

After breakfast we pulled the sledge about five miles in all, and then deposited it near a prominent point of



Cape Adare, shouldered our sleeping-bags, and walked the remaining twelve miles.

Levick, Dickason, and Browning, who had been looking out for us for the past day or two, met us about four miles from home, and we handed over most of our load to them with some pleasure, and within an hour and a half of meeting them we were once more all sitting round the table in the hut and being regaled with huge slices of toast and mugs of hot tea. The same night Levick weighed us, and we found that Campbell had lost 3 lb., I had lost 5 lb., and Abbott, who was most out of condition when we started,  $9\frac{1}{4}$  lb.

## CHAPTER IX

### AUGUST AT CAPE ADARE

Over-indulgence in food its own cure—Trip to fetch back sledge—A cheery journey—Fine weather and scenery to match it—Waterholes in the sea ice—*The* gale—Our storehouse destroyed and the sea ice removed—A pebble hurled through our black bulb thermometer—Loss of the tide-gauge—Building sledge-boats—A diagrammatic blizzard—Instructions to observers—The sun commences to take effect.

THE day after our return to the hut we had quite settled down to our routine again, and the only lasting effect of the week's sledging was an increased appetite and a tendency to eat much more sugar than was good for us. The desire, however, as usual soon proved its own cure, for a distaste for luxuries followed immediately on the heavy feeling caused by the indulgence in them.

After a couple of days' rest Campbell asked me to accompany Levick, Browning, and Dickason when they went to fetch in the depôtéd sledge, and accordingly on August 8th we started away from the beach, carrying with us a few biscuits and a little chocolate for lunch, and our sleeping-bags. It had originally been intended that we should take with us another sledge, on which had been fitted a pair of iron sledge-runners which we had with us ; but after two or three hours' work with sandpaper and paraffin on the surface of the runners and the rusted butterfly nuts, we found that

they would not fit the sledge, and that the latter would have to be cut about before it could be armed, and so we left the job till later and carried the bags on our backs instead.

Abbott had made some very decent slings for our sleeping-bags out of the material we had originally intended to use for curtaining off our bunks and some white line, and by the time I reached the sledge I had almost forgotten I had a pack. This was a great contrast to the last walk home, when the bags were carried over our shoulders on ski-sticks, and it shows very well the value of having well-devised equipment for packing as well as for other purposes. I am afraid that on this occasion I quite lost any reputation I may have had for judging distances by telling Browning and Dickason that we had only one mile to do when we were still considerably more than two miles from the sledge, but I must plead in extenuation that Antarctic distances are very hard to judge.

We had rather a curious example on the last trip of the way experience is necessary before it is possible to judge distances here with even approximate accuracy. On the morning of the second day out I happened to mention that at the rate we were going it would take us just about two days to reach Duke of York Island. Abbott very strongly asserted that we should be there before nightfall, and he stuck to his point so firmly that a bet of a bottle of beer against one of lemonade was finally arranged. That night we camped eight miles away from the island, and reached it at camping time on the next day; but it was only by estimating the distance myself and then doubling the figure obtained that I arrived at the figure which proved to be about right.

We made only two halts on our way down the coast on the way to fetch the sledge, and we arrived in plenty of time to make a snug camp on a drift and make our

hoosh before the failure of the light compelled us to use candles, and this is a great advantage at all times, and more especially when, as now, the cook is without experience. I expect that we were probably over-careful in the amount of snow and ice we piled on the skirting, but our adventure of a few nights before was still fresh in my mind, and our accounts had been very vivid indeed, quite enough so to infuse a good deal of zeal into those members of the party who had not been caught.

On the 9th we made a few miles north along the coast, but the surface was still bad, and, willing as all hands were, it was impossible to move at more than a crawl, so that camping time found us still several miles short of our destination. After we had pitched camp in the shelter of a prominent spur of the cape the weather thickened, and there was a good deal of gusty wind. It looked at one time as if we were going to have a repetition of the last blizzard, but fortunately the breeze died away without coming to anything ; and the next day we made our way back to winter quarters, being met by Campbell about a mile south of the beach. We heard from him that Abbott had been confined to bed with a strained knee, but was making satisfactory progress and would be about again in a day or two. The journey, as usual, finished up with another disgraceful orgy of tea and toast. It had been too short a trip to be really unpleasant, though the temperature had remained low, and on the whole of our two days' return march we had been galled by a nasty N.N.W. wind. The chief feature of the march had been, I think, the general air of cheerfulness pervading the party, and when I cast my mind back, searching for incidents, as when writing this account, there is a continual under-current running through my thoughts which, in its clearer moments, resolves itself into the refrain of a song Browning was for ever singing or humming



ICE CRYSTALS FORMED ON SEAWEED.





while he was at work with the primus, or when we were breaking camp, and which ran something as follows :—

We're on the march, we're on the march ;  
We couldn't afford to pay the rent,  
So we packed up our traps and away we went.  
All we left for the brokers was half a pound of starch.  
At three in the morning without any warning  
We went on the march.

The first day or two after our return were fully occupied writing up the notes from the two journeys, with occasional walks for exercise. The weather remained perfectly fine, and we had two or three days when the Antarctic showed itself at its best.

The morning of the 12th was particularly fine. When we turned out the moon was low over the western mountains, and looked about three times the size I have ever seen it in England. It was a deep golden yellow in colour, and the shadow and light markings accentuated the irregularities on its surface and showed them up very plainly.

The mountains were absolutely clear, and valleys and ridges appeared sharply cut as in a cameo brooch ; and though banks of clouds hid the sun from us for the greater part of the day, they and the foothills in front of them were bathed in sunshine for three or four hours. They certainly did look that morning as if they would console us for a good deal of hardship during our sledging. A fall of temperature during the morning and the previous evening had been accompanied by the formation of whirlwinds and columns of frost smoke to the northward, and it was evident that the old water-holes in the sea ice had opened up.

A couple of days later I walked out with Levick to have a look at one of these waterholes, which had opened up quite near the cape, and it was then for the first time that we realized what a menace these might

be to our sledging. When we had walked halfway to the end of the cape, we found our way completely barred by a lane of open water and slush, in which a number of small floes and bergs were surging up and down with the tide. It was easy to see that if the same thing had happened farther to the west our sledging might be stopped for days at a time, because the air temperature was so cold that the lanes, soon after they were formed, would be covered with a meshwork of crystals, through which it would be impossible to force a light boat, and which would be also impassable for sledges. We should be, so to speak, between the devil and the deep sea, and should be obliged to stop. Our hope at that time was that this opening and closing of waterholes might be due to local conditions—perhaps to the peculiar shape of Cape Adare—and therefore that to the north and west we might meet with conditions similar to those along the strip of sea ice from Butter Point to Relief Inlet, over which Shackleton's Northern Party had travelled. Unfortunately Borchgrevink had not left any notes from which we could be certain whether or not we were meeting the same conditions which the Southern Cross Expedition encountered, and this was a point we should much have liked to have cleared up. None of us were particularly anxious to go out to sea, and so to afford an awful example by which some other explorers might learn a lesson in caution.

We were soon to have our doubts set at rest, however. When we woke on the morning of the 15th an E.S.E. breeze was just beginning to make itself felt, and this increased until in the afternoon it reached hurricane force. Our journeys to and from the meteorological screen were performed on all fours during most of the day, and coming back we had to make quite extensive use of the guide-rope, and even then progress was quite a battle. It was as hard work as pulling on

the *Terra Nova's* braces ; in fact I remember moments pretty nearly as exasperating as when we had been pulling on the lee braces for some time without making any impression and suddenly found out that some one in charge had forgotten to let go those on the weather side. In particular we were battered about very much when beating up the side of the hut, along which the wind sweeps with great fury. The difficulties were much increased to-day by the presence of the iron sledge runners, which were right in the fairway, and which we did not care to attempt to move until the wind slackened a bit. I barked my shins once or twice on these to-day, and their presence was an additional annoyance we could very well have done without. Dickason lost our electric torch while taking the 6 p.m. observations, and as the float and the mica lantern were unmanageable in the wind, we were obliged to admit ourselves beaten and, for the first time, to discontinue those observations which needed a light. As a matter of fact, a good proportion of the instruments had anticipated this last disaster, and had broken down earlier in the day. The door of the meteorological screen refused to remain shut, and no sooner did we put a staple in it than it was blown out, and I was afraid for some time that we should lose the thermograph altogether. It is difficult to convey on paper the force of the wind. There is, at any rate, no doubt that I never knew what a real hurricane meant before I came to this delectable spot. It makes one feel breathless even to write about it, and it was quite a difficult matter to get one's breath whilst out in it. Pebbles were flying about the beach like small bullets, and the hut, in spite of its supports, quivered and complained like something alive. Life in the hut was prevented from becoming too monotonous by frequent avalanches, and that night we had flour in the butter and biscuit in the spinach. The temperature indoors

had ranged all day from 20° F. to 10° F. ; the ink was frozen in our fountain pens, and water in the buckets, while the iron of the penholder bit deeply into my fingers as I wrote the above account in my diary. It was my bathing day to-day, but the cooking department had run out of ice, and as it was impossible to fetch more, the ice I had wisely collected beforehand was commandeered for the general use.

When I finished writing up my diary on the 15th, I was under the impression that the gale was falling off and would soon cease. This was actually a fact, but although the lulls became more pronounced and of longer duration the gusts increased in force still more, until about 11 to 11.30 p.m. they became absolutely devastating. It was probably during this last half-hour, the culmination of the hurricane, that the main part of the damage to the camp was done. The hut swayed and creaked so much that I think we all became anxious for its safety, and, in spite of a good fire with a red-hot stove, the temperature fell rapidly, until we were all shivering in our eiderdown bags and a perfect gale of draught made the circuit of the room. A curious result of the gusty nature of the wind was the corresponding increase and decrease of pressure in the hut, and the barograph pen oscillated continually with each of these changes, converting a single line to a track of ink from two to three-tenths of an inch broad, while the effect of the gusts on the drums of our ears was almost intolerable.

The next morning signs of the unusual ferocity of the gale were to be seen everywhere. The roof of the storehouse we had made out of Borchgrevink's spare hut had been stripped off, triangles of wood which had required the united strength of the party to place in position, and which were each composed of three beams 3 inches by 6 inches by 12 feet in length, had been picked up by the wind and tossed thirty or forty



THE *GREAT WESTERN* MAKES HER TRIAL TRIP.



LOWERING THE FISH-TRAP AT CAPE ADARE.





yards, and the storeroom interior looked as if a fair-sized whirlwind had been playing with the gear all night.

Fortunately our losses were very small, and none of the stores were such as would easily sustain damage. The strength of the disturbance inside the building may in some measure be gauged by the fact that even my boxes of rock specimens had been overturned and included in the general chaos.

To windward of our own living-hut the wall of cases had collapsed inward, and many of the tins were scattered about ; but here again, fortunately, nothing essential had been lost. Two 12-lb. blocks of patent fuel, which Browning had dropped when he came round the corner of the hut, had been carried some way to leeward, and one of Borchgrevink's flagstaffs, a stout pole 15 feet high and 5 inches in diameter, had sailed along until it had been brought up across the guide-rope of the two huts. It was really providential that none of us were injured by any of the dozens of missiles that must have been flying about during the gale, for empty boxes and tins innumerable had left us lamenting, and the beach was strewn with wreckage.

The loss to the meteorological department was unfortunately considerable, for besides a sunshine card and a wind vane, which could be easily replaced, the solar radiation thermometer had had a pebble hurled right through it, making two neat holes in the outer vacuum bulb and breaking off the end of the black bulb inside, and this though I had believed it to be out of the direct path of the wind. The pebble must have been going at a terrific pace, for the glass which remained was scarcely starred. The minimum thermometers, I fear, were never reliable under blizzard conditions, for the dumb-bell would be shaken down to the bulb by the vibration of the screen, and when

we arrived to read it, it was usually registering about  $-120^{\circ}$  F.

All these things, however, though interesting as showing the force of the wind, were only annoying in so far as they caused extra work and impaired our observations. They were more or less ordinary, and could be borne with equanimity. Our feelings may be better imagined than described, however, when we gazed seaward this morning and realized the astounding fact that the sea ice beyond the bay, our only hope for any future sledging, had gone out during the night. From our position near the hut door things looked even worse than they really were, for a dense pall of frost smoke restricted our vision and we could see nothing but open water.

We had all been rendered vaguely uneasy by the recent periodical opening of leads and waterholes to the north of us, but I do not think that any of us expected as colossal a break-up as at present. When the fog rose, as it did later in the day, our feelings were somewhat relieved, for the lead proved to be only one or two miles in width ; but it extended as far as we could see to the west from the top of Cape Adare, and from that time on it was certain that we could never trust it for a long journey.

The dispersal of the sea ice had depleted still more our slender stock of scientific instruments, for with it had gone our only really adequate tide-gauge, and from now on we were obliged to revert to the old-fashioned tide-pole fixed in a recess in the icefoot. This tide-gauge, which we owed to the kind offices of Mr. Halligan, the hydrographer to the Government of New South Wales, seemed to have been dogged by misfortune from the time when its donor, with Professor David and myself, burgled the Works Department at Sydney in our first enthusiasm to have a look at it. It started its career with an involuntary bath in the swell

at the icefoot when we were landing stores, and then its erection was delayed for several months before we considered the ice to be safe enough to permit of our risking it. At last, in June, a hole was dug for it, and the following day the sea ice, hole and all, moved bodily out for a hundred yards and we were obliged to wait for the lead to freeze over. By the time we tried again to make a home for it July was well started, and before we had it in good working order we left on our trip to Duke of York Island. From time to time since we had spent a few hours on the floe, working at it, but through lack of paraffin we had been obliged to use colza oil to lubricate the wire in the pipe which protected it from the ice, and the temperature was too cold to allow the wire to run freely.

Before we had secured a single complete record the August hurricane struck us, and it was "Good-bye, tide-gauge." When we told Browning, who had now taken over Dickason's cooking duties, of the loss, he said, "Well, the weight couldn't have been on the bottom, or the gale wouldn't have taken the sea ice out." As the said weight was about 60 lb. of kentyte the remark may be taken as satirical. It may be classed with his other retort to my observation that thermometers were soulless things, made one day when the number of frost-bites they had caused was rather more than usual. "At any rate, sir," he said, "some of them are full of spirit."

On the 17th we walked up to Cape Adare and examined the sea from a height of well over a thousand feet, but the prospect was certainly not too encouraging. The lead seemed to extend right to the coast just north of Cape Barrow, and though it was already freezing over, we felt that we could never trust the ice again.

Having had a good look out both to the east and to the west of the cape, we collected a few erratics, and Levick collected a frozen penguin on which to do a

post-mortem, and then we returned home. Already the sun was beginning to loosen stones on the cliffside, and it was clear that it would be advisable to keep clear of the screes along the cliff during the summer-time.

When the sea ice was so long forming in the autumn at Cape Adare, it had been made obvious at once that if we were to do sea-ice sledging along the coast to the north of us we must have some sort of boat or other. The heavy, almost flat-bottomed, Norwegian pram we had with us was clearly of no use at all for work away from the beach, and so Campbell set his mind to devise some substitute which should possess the two essentials lightness and seaworthiness. With his usual fertility of resource, he hit upon the idea of covering the sledges we should be using on the journey with strong canvas, which was cut so that it formed a shell over the sledge and left only a space in the middle, in which the man in charge could sit. The canvas cover when completed was well soaked in colza-oil to make it waterproof. The first of these sledge boats was christened the *Adélie*, and when it was launched in the autumn it proved quite stable, and so light that quite a respectable speed could be attained by the use of a thin bamboo as a paddle. This craft, however, though very seaworthy and light, was not large enough to be of much use as a cargo boat, and the second was therefore designed on an improved model. This had the canvas covering so much larger that a rolled-up sleeping-bag could be inserted between the top of it and the sledge, and in this way much more freeboard was obtained. This second boat was christened the *Great Western*, as we expected we might have to use her on our next western journey. She was so high out of water when she was launched that it was clear she would take several hundred-weight of cargo as well as her complement of

men, and when well loaded she proved to be so "stiff" that we could walk about in her with safety. Thus with a very little trouble we were provided with boats sufficient to ferry our whole party and our gear across an open lead in a couple of trips, and in the spring Abbott set to work in a similar but lighter shell for the second party's sledge, and this was made out of our despised curtain material. The canvas "kayaks" for the main party when well soaked in oil weighed only 15 lb. and 20 lb. respectively, and they stowed away very handily on the sledge when packed.

Fortunately, on our journeys this year we were never obliged to make use of these boats, but they proved very useful during the summer at Cape Adare. A year later, when a party was fetching a depôt from the back of a bay farther down the coast, the success of their mission was due undoubtedly to a similar kayak, made after Campbell's model, by means of which they were enabled to cross a rapidly widening lead.

On August 18th a southerly breeze again threatened to rise into a blizzard, but, fortunately for the weakened sea ice, this promise was not fulfilled, and after reaching gale force for a few minutes the wind as quickly died away. It was on this occasion that we saw a sight which emphasized very distinctly the gusty nature of all the winds at places in the immediate shelter of the high cliffs of the cape. Shortly before the maximum of the gale there was a complete lull, and this was followed by whirlwinds travelling at a speed which must have bordered on sixty miles an hour. These were rendered very visible, almost diagrammatic, by the columns of drift and snow which accompanied and were incorporated in them—columns which were so high that their upper end was lost in the high-level fog which hung like a pall over the whole scene. The columns of snow were very like waterspouts in



shape, were wide apart, were travelling parallel with one another, and as many as a dozen were in sight at one and the same time.

It was strange indeed to stand in a dead calm near the hut and see these columns passing at a distance of a few yards on either hand of us. As those nearest us passed there would be a gentle back-draught of air towards the moving mass, but one was tempted to think that there was no force in the beautiful whirling things, until one appeared which was darting straight for the hut. Then shelter appeared advisable, and for the few seconds when it struck us it was as if a mighty fist had dealt a blow at the hut, while everything around was enveloped in a blinding swirl of snow.

It was now rapidly getting lighter, and with the return of the sun we were to expect a speedy return of beasts and birds, especially the Weddell seals, signs of whose presence had been visible all through the winter, and the Emperor penguins, which should now be preparing to leave their rookeries on the wanderings in search of good feeding-grounds which precede their annual moult.

We knew from Borchgrevink's book that we might expect the first of these birds in the spring, and Levick, in whose charge were all zoological observations, now produced a notebook, and issued an ukase that every one should assist in filling this with notes as speedily as possible. The rules laid down in the beginning of the book were characteristic, and I will quote them here in case they should be useful to future sailor scientists under similar conditions:—

“Members are invited to write in this book notes on anything of interest seen by them relating to birds, seals, whales, etc., appending their initials and bearing in mind the following observations:—

“1. Never write down anything *as a fact* unless you



are *absolutely certain*. If you are not quite sure, say 'I think I saw' instead of 'I saw,' or 'I think it was' instead of 'It was,' but make it clear whether you are a little doubtful or very doubtful.

"2. In observing animals disturb them as little as possible. This especially applies to the arrival of the penguins, as it is most important to allow them to settle down naturally without interference from us, and to the giant petrels, which became wilder last autumn after we had hunted them.

"3. Notes on the most trivial incidents are often of great value, but only when written with a scrupulous regard to accuracy.

"N.B.—Please remember that we have every reason to believe that birds feel pain as much as we do, and that it is well worth half an hour's laborious chase to kill a wounded skua rather than to let it die a slow death."

This last caution is especially typical, and is, unfortunately, equally necessary, for, try as one will, there is no doubt that one tends to become more callous in the course of a year or two spent under primitive conditions, and thoughtfulness for animals then becomes a virtue which needs conscious cultivation to keep it up to standard.

The last few days of August and the first few days of September were again fully occupied with preparations for sledging. These commenced with one strenuous morning spent fitting the iron runners to the 10-foot sledge used on the trial journey, and the test which followed this innovation was successful beyond our wildest hopes. On the salt and snowy surface of one of the brine lakes on the beach one man was able to pull 382 lb., and if this promise was fulfilled on the sea-ice surface, our discomfort on the next journey would be halved.

Indeed, there were numerous signs that the next

journey was going to be much more bearable than the last, for the sun was already beginning to get in good work on the snowdrifts of the black cape, and the sombre colour of the latter was lightened in places by a whitish bloom, caused by the efflorescence of the salt from the crevices of the rock.

Any spare moments now were spent by Levick and myself in excursions on to the fresh sea ice, which had once more made the sea passable, and we secured during this time another fine series of photographs of the cape and its surroundings.

On one of these trips Abbott and Dickason walked out to look at some seals which were lying near the Caveberg, and spent some time trying to catch some small fish which were disporting themselves in the tide to the south of the bay. They made a small net out of a pocket-handkerchief on the end of a ski-stick, but were unable to catch any. The fish did not appear at all frightened, but always moved just beyond the reach of the net.

## CHAPTER X

### DEPÔT JOURNEY TO THE WEST

Preparing pemmican—An alarm of fire—Fire-bars found in the chimney—The “two-decker”—Iron runners a success on sea ice—Our clothes—Start for the west—Penelope Point—Heavy going in Relay Bay—Magnificent scenery—Ski, and two miles a day—We return from Cape Wood—A concert in the Abbey Cave—Weddell seals—An area of calms—Levick detained at Warning Glacier by blizzards—A short trip to Warning Glacier at the end of the month—Narrow escape from loss of a cooker—A gusty blizzard—We return to Cape Adare at the run.

EARLY September was spent preparing two sledges and weighing out food for our forthcoming trip along the west coast of Robertson Bay. The rations taken were much the same as on our last journey, but the work of preparation was a much longer task, because we were taking with us six weeks' provisions. Distinctly the longest job we had was, as before, the powdering of the biscuit which was to go in our hoosh ; but though this was really hard work it was not nearly as unpleasant as that of opening the pemmican-tins and extracting their contents. This latter food is evidently prepared in a liquid or semi-liquid state and then poured into round tins, which hold about 12 to 14 oz., and the tins are then hermetically sealed. As we required 84 lb. for this trip there were, therefore, close on a hundred of these tins to deal with, and by the time we had finished our hands, thanks to a thin tin-opener with a metal handle, looked as if we had

just received half a dozen cuts with a cane. Each man possessed one or two small blisters on his palm, besides innumerable cuts, which were the more unwelcome as it proved impossible to keep the blood from them out of the pemmican. Our record, timed by the hut clock, was seventeen tins in fifteen minutes for two men, and as this meant opening the tin, pushing out the partially frozen pemmican core with a rolling-pin, cutting it up with the pemmican-cutter, and emptying the tins on the rubbish-heap outside the hut this was not at all bad. The pemmican-cutter had been made from a long butcher's knife, bored at the tip with a hole, through which was run a nail which was clamped to a wooden block. The machine was thus after the principle of a tobacco-cutter, and the knife was worked up and down with one hand whilst the frozen pemmican was passed over the block with the other.

While Browning and myself were thus engaged on the food Abbott and Dickason had been busy fitting a flooring of venesta-lids to the 12-foot sledge we were taking, Levick had been changing plates and looking to his cameras, and Campbell weighing sledges, clothing, etc.

Campbell had decided that Abbott and Dickason and myself should accompany him on the depôt trip, but Levick and Browning were to travel with us as far as Warning Glacier and remain there for a day or two to take photographs before returning to take up their work again at winter quarters.

The only serious interruption to our preparations for sledging during these days was afforded on October 3rd by a sudden alarm of fire. A strong southerly wind had sprung up in the early morning, and, as usual, the draught in the stove was very strong, and while we were seated at breakfast some one noticed a red glow just where the chimney passed through the

roof. At the same time a strong smell of charred wood became noticeable, and it was clear that if we were to save the hut prompt measures would have to be taken. Fortunately, we had a good supply of water on the stove at the time, and so, whilst some of the party cooled the stove-piping with wet towels and dish-cloths, Abbott climbed on top of the roof by means of the guide-rope and succeeded in getting part of a bucket of water inside the chimney. This was not sufficient to put the fire out, but it checked it decidedly, and two or three further doses of snow from the drift in the lee of the hut completed the work. The cause of the fire was very evidently the accumulation of soot in the chimney, and Campbell decided to have the piping taken down piece by piece and thoroughly swept. The result of this drastic action was more than any one suspected, and the fire turned out to be a blessing in disguise, for the sweeping revealed the fact that the lower joint of the chimney was almost completely choked with a spare set of fire-bars which had been stowed there by some ingenious space-saver on board the *Terra Nova* and had never been discovered. The fire burned much better now, and it was easy to force the flames right round the oven. There was great rejoicing in the galley when the cook realized that in future it would not be necessary to sit up until far into the night on baking days in order to nurse the bread.

On October 6th while I was finishing off my meteorological notes Campbell, Levick, Abbott, and Dickason took the first sledge, with between 500 and 600 lb., and depôté it about two miles down the coast and beyond the worst pressure. On the following day we all started away, dragging with us the iron-runnered sledge, with the rest of our equipment, and the small sledge, with the outfit of the photographic party.

When we arrived at the place where we had depôté

our first sledge we unpacked both, stowed the ski as a flooring on the iron-runnered sledge, and then lifted the 12-foot sledge on to the other, strapped the two tightly together, and repacked them, stowing as much as possible of the smaller and heavier gear between the two sledges. All things considered, we managed to make a very good stow, and the load was not appreciably higher than an ordinary single sledge load.

The ice-axe and shovel for camping, the depôt bamboo, and the theodolite legs and camera legs were all lashed alongside, so that the "two-decker," as we christened her, looked very like a travelling cheapjack caravan. In spite of this dissolute appearance, however, she was destined to do us immense service during the next two seasons, and when her back was broken fourteen months later we all felt as if we had lost an old friend.

Immediately we got under way after the repacking we realized that the trials Campbell had carried out with the iron-runners had not been at all deceptive. Our load now for four men was 1,140 lb., and yet we were doing two miles an hour over the same surface which had taken three men the whole of an eight-hour day to drag a light sledge with a fortnight's equipment between four and five miles.

The feeling that we were making good progress certainly added a touch of enjoyment even to spring sledging, and during the first part of the trip we were generally fairly happy once we were in our harness and well under way. About half an hour after starting in the morning we usually halted for five minutes to enable any one to get rid of those extra clothes which are too hot to march in and which one does not feel inclined to throw off at the beginning of the march when the wind is still biting and we have not warmed up to our work. It is after this that there is the greatest danger of losing things from off the sledge,







THE CLIFF OF THE DUGDALE ICE TONGUE.



THE FOOTHILLS OF THE ADMIRALTY RANGE.

for if anything is left unsecured it will be those things which from time to time are flung on to it when a change of temperature or wind has necessitated a corresponding change of clothing. On our last trip we had our lesson when Campbell lost his wind-proof jacket and had three or four very uncomfortable hours when it looked as if it were coming on to blow. As a rule each man prefers to carry a dozen or so safety-pins with him. These are pinned when out of action on the breast of one's jersey, and when clothes are discarded for any reason they can be pinned securely to one of the main straps of the sledge.

Our marching kit was always very light, and it proved to be quite adequate to any temperatures we encountered. In my own case during the whole of the nine weeks I was away sledging this spring I wore only heavy underclothing—singlet and pants of Jaeger wool—and over these either a shirt of dark grey Kaiapoi wool or a blue fisherman's jersey; for my feet a couple of pairs of woollen socks and finneskoe always proved ample protection, and over all were drawn a wind-proof suit of light gaberdine. The trousers of this latter suit were lashed tightly down over the finneskoe, the blouse over the trousers, and the helmet projected far below the neck opening of the blouse, which could be drawn tight over it by a piece of cord. At night-time the stiffer windproof clothing used during the day was discarded, and woollen pyjama trousers and coats were donned over our woollen underclothing, and then over all was drawn a complete suiting of thin summer windproof material.

On September 9th we left Levick and Browning in camp at Warning Glacier and started away for the west, and after a fair day's march we camped underneath the cliff of the Dugdale Ice Tongue, on the other side of the bay. This tongue is one of the floating extensions which are so common in Antarctic glaciers, and the

cliff at its sides and end varied between 30 and 50 feet in height and looked like huge walls of plaster-of-paris rather than of clear ice. Off the end of the tongue several seals were lying, and I noticed across the back of one of them six parallel scars, fifteen or more inches in length, which showed plainly that the animal had narrowly escaped being the meal of a killer whale.

On the next day we turned north along the western coast of the bay, and our lunch halt was made just off the first prominent cape, which was afterwards named Penelope Point, and, walking round the point, we discovered on its north side a cave cut by the sea in the steeply dipping green quartzites which here, as elsewhere, form the coastal cliffs of the mainland. This cave proved to be 80 yards deep, and bore eloquent testimony to the power of the same westerly swell which had built up the icefoot at Cape Adare. We were destined to spend many nights camped in the Abbey Cave at Point Penelope, and nowhere have I found a snugger camping-ground. However hard the wind might blow outside, no slightest disturbance penetrated to the air inside the cave, and the only sign of the gale was a subdued roar, which lulled us to sleep, and a constant veil of snow across the opening of the cave as the snow which was eddying round the cliffs above gradually trickled down to form drifts about its entrance.

Our progress thus far had been better than we expected, but the surface in the little bay we were now opening up was to prove a far different problem from the ice we had just left. Here the snow lay, first 1 foot, then 2 feet, and even 3 feet deep, without any crust at all, so that we were staggering along with difficulty ourselves, and it soon proved impossible to move the heavy sledge. There was nothing for it but relaying; the "two-decker" was unpacked and resolved into its components—the "ironclad" and "old wooden-runners"; and we resigned ourselves to the





AN ICE GORGE.



CAMP OUTSIDE THE ABBEY CAVE.



most heartbreaking work which can confront a man-hauling party. We were compelled to start relay work at 2.30 p.m., and by six o'clock, when we camped, we had made considerably less than one mile on our way.

The next morning, September 11th, showed us plainly the reason of the thick, soft snow which was so effectually blocking our purpose. To windward of us was a wall of drift blotting out all the view to the east and travelling along from the S.S.E. past the entrance to the bay at a terrific pace. We ourselves were in a region of dead calm, and from the condition of the snow it was evident that no wind had blown here since the formation of the sea ice. As we penetrated farther and farther north along the coast we found later that the zone of calms grew more and more pronounced, and we secured undoubted evidence that this peculiarly favoured district was never visited by the winds which were the curse of our existence at Cape Adare. Day after day have I worked along that coast and have seen the same impenetrable wall of drift to the eastward, and a comparison of our records with those kept on the east side of the bay by Browning during this and the journey which followed proves conclusively that there the equinoctial gales were raging with their usual constancy and fury, while here no breath of wind disturbed the perpetual stillness or ruffled the virgin surface of the snow.

During this day by dint of perseverance and sheer strength we managed to make a distance of four or five miles over a surface on which soft snow such as we met with yesterday masked very heavy pressure, which added much to our discomfort and was the cause of several capsizes. The weather remained absolutely unchanged, and the haze, which here always accompanied the heavy weather on the east side of the bay, prevented us seeing much of the mountain scenery to the west of us. Ahead of us was another point,

which formed the northern limit of the little indentation we afterwards named Relay Bay, and this we reached at lunchtime on the 12th. Off this point were three pyramidal islands, and the point we named Island Point, while to the larger of the three islands was given the name Pharaoh Island.

This day was clearer, and we were favoured with our first glimpse at close quarters of the magnificent scenery which was going to be our chief solace in the weeks that followed. The little semicircular bay was bordered on the shore side for the greater part of its extent by steep ice-cliffs. These were the front of two glaciers, one of which was beautifully terraced, descending in steep steps over a very uneven bed, and was of fair size, while the other was a smaller ice-fall, which descended steeply for a couple of thousand feet from a small snowfield cradled in the foothills above it. Between the glaciers on either side of them stretched steep, inaccessible rock-spurs, and the rock and ice both emphatically forbade any idea that by means of them access might be obtained to the interior beyond.

The snow on this day became even thicker than on the two previous days, and when collecting, or rather attempting to collect, from the cliffs of Island Point my legs were completely invisible for the greater part of the time, and, though most of us were novices with ski, we found ourselves obliged to take to them in order to make any headway at all. From this time on we invariably pulled on ski when we were in heavy snow country, and as we became more used to them we found that not only could we get along faster on them, but when they were armed with sealskin strips or rope-netting we could exert every bit as much pull on the sledge when on ski as without them. I found them also especially useful for collecting from the rocks above the steep, soft snowdrifts which lined the shore, though during my novitiate it was no uncommon thing

for me to take a toss, and often had there been any spectators of my manœuvres they would with justice have wondered if they had not come across some new burrowing animal with very long and energetic wooden feet.

On the 13th we rounded Island Point and opened up another bay, which was very full of bergs and heavy pressure floes, and which we therefore named the Bay of Bergs. High up on the hills behind this bay the most prominent feature was a very fine example of a highland ice-cap, which extended over the upper half of two mountains and increased to considerable thickness in the valley between them. It fronted the sea as a sheer cliff, which was probably from 50 to 100 feet high, and consisted, as usual in this calm area, of two distinct portions, an upper layer of *nevé* and a lower, thicker portion of ice, divided from each other by a definite line which was probably an old glacier surface. The evening of the 13th saw us camped on the north side of Cape Woodbar, which is the northern point of the Bay of Bergs, and as we were making so little progress and the surface of the bay in front of us appeared to be even worse, Campbell decided to leave our main depôt here, taking only a week's provisions across the bay and depôtting these on its northern shore.

In the morning accordingly we started away with our camp equipment and eight days' provisions, intending to carry them on the iron-runnered sledge to Cape Barrow, the northern extremity of Robertson Bay. After we had made half a mile, however, we found the surface so bad that it was impossible to move the sledge at all.

We then returned and fetched the other sledge, and managed by transferring our cargo to this to reach Cape Wood, on the other side of this small bay, Pressure Bay, and camped there on the icefoot after a hard

day's work, during which we had made exactly two and a half miles. The glare had been intolerable all day; the sort of bluish light when it is impossible to tell sastrugi from hollows, and which, with the sun at a higher altitude, is most productive of snow-blindness, and the bay was full of heavy screwed pack, with 3 or 4 feet of snow upon it. Most of this snow was undrifted, but a little had a thin crust, and even with our light load and on ski we were continually obliged to turn round and face the sledge and give standing pulls on the main trace in order to move the sledge along, while every time she came over a hump after much persuasion, she plunged into the drift on the farther side, bows under, and stuck.

Cape Wood is ice-capped, and avalanches had fallen on to the sea ice during the winter, while even in the short time we were camped beneath the cliff one ice and several snow avalanches took place.

The surface had gradually been getting worse, and several times during the latter part of the day I had been able to push my ski-stick down 3 or 4 feet into the loose snow without finding bottom, and it was plain that if we were to get anywhere we must return for more provisions. We therefore made our depôt here, and on the next day started on our return to winter quarters.

The temperatures during this journey had been decidedly lower than during the last, and on the morning of the 13th we registered our lowest temperature for the year,  $-42.8^{\circ}\text{F}$ , and there was on this day a fair crop of frost-bitten faces, fingers, and feet. Nevertheless, thanks to the presence of the sun and the greater length of the days, and still more to the complete absence of wind, this trip was never nearly so uncomfortable as the last, and our chief discomfort was due to the impossibility of obtaining a firm camping-ground, and, of course, to the disappointing nature





THE ABBEY CAVE, AT PENELOPE POINT.



of the surface. It is extremely hard to keep an unvarying good temper when the sledge is converting itself into a snowplough, while the soft snow had an unpleasant habit of "balling" under our feet, and these balls would in time grow so large and hard that a special halt had to be called every hour or two in order to get rid of them.

The return trip was uneventful, and on September 17th we once more arrived at Penelope Point and for the first time made our camp in the Abbey Cave. It was on this occasion that the latter gained its name, for the roof and sides acted like great sounding boards, and our usual Sunday evening concert sounded quite impressive. We left here another small depôt, and then repacked the "two-decker" and started across the bay direct for winter quarters at Cape Adare. At a crack about halfway across the bay we saw half a dozen Weddells lying, and later in the day many more. This increase in the number of seals basking on the bay ice is a sure sign of the approach of the breeding season, and much reassured us as to the stability of the ice within the bounding capes of the bay—Cape Barrow and Cape Adare. We have found by experience that the Weddell seal is seldom caught out, and should the ice break out during the rearing of the young these latter must inevitably become the prey of the herds of killer whales which hunt amongst the dispersing pack.

In the last few hundred yards I noticed two or three portions of the surface where the sun had already exerted a considerable glazing effect, and signs of this sort of the approach of summer were not uncommon on the sea ice near the cape. This is probably due to the presence of fine grit blown from Cape Adare, as the black rock absorbs much more radiant heat from the sun than does the lighter-coloured sea ice.

This short journey had presented many interesting

and unexpected features to us, and, although our original hope had been to find the sea ice windswept and make our way without difficulty to Cape North or beyond, yet we never felt sure of the ice after the August gale. The discovery of the calm area was very interesting from a scientific point of view, and the comparison between the records on the east and west side of the bay cannot fail to be of great value to those people whose business it is to decide whether or not the great Antarctic blizzards are of local occurrence and due to local causes.

Levick and Browning had been detained at their camp at Warning Glacier for several days by the blizzard we saw from the west, and returned to the hut in calm but overcast weather just in time to escape another blizzard, which raged until we returned. On the way home they dropped the half-plate camera and a tin of oil off the sledge, and had not been able to go and look for them up till the time when we returned. Before the blizzard sprang up, however, Levick had managed to get some good general views of the glacier, and Browning had kept the meteorological log going through both winds. They had been much worried when they were camped on the sea ice off the face of the glacier by a very perceptible swell, which affected the ice under their camp, and at one time made them fear for their safety. The same swell had made itself felt in the west of the bay, but I should be more inclined to attribute it to the actual impact of the gusts on the sea ice than to an after-effect from the sea beyond the ice-belt.

A day or two after our return from this trip the first Emperor penguins strolled up to the beach. The birds, of which there were four or five, were in good condition, but were almost without fat, and the largest only weighed just over 50 lb., whereas the adult





CAMP UNDER WARNING GLACIER.



FRINGES OF ICICLES ALONG AN ICE-CLIFF.

Emperors, when they are protected with a good layer of fat at the commencement of the winter season, may weigh as much as 90 lb. The men killed two or three of the birds and skinned them, and the breast formed a welcome addition to our supply of fresh meat, for an Emperor's breast will weigh 15 or 17 lb.

On the 22nd Browning and I walked about five miles south of the beach and saved the half-plate camera which the photographic party had dropped off their sledge on their march into winter quarters. Fortunately, the camera was not very much injured. The box and plate-holders had been blown thirty or forty yards in towards the land and lodged against a pressure ridge.

The day after this walk Levick, Dickason, Browning, and myself started away with a week's provisions to Warning Glacier to obtain a complete photographic record of the structure which could be seen on the face of the glacier. Thanks again to the iron-runners, we made a good trip down, and on the first evening camped under the partial shelter of the northern tongue of the glacier, and there we remained until the 27th, harassed almost the whole time by strong wind, but venturing out in the lulls to obtain photographs, and the results proved to be well worth the trouble.

Whilst returning from one of our trips along the face of the glacier we were surprised by the first strong gusts of an approaching blizzard, and were making haste to get back to camp when I noticed three things rolling past us to seaward. At the same time we were obliged to go down on our hands and knees to avoid being upset by an unusually strong gust, and we at once guessed that the fugitive objects were parts of our cooker. On returning to camp our suspicions were confirmed, and we found that three parts of the cooker were missing, the bottom portion in which the primus stands, the lid of the outer cooker, and the large outer cover which goes over all. Browning

told us that he and Dickason had just filled the cooker and placed it in position in front of the tent with the food-bag on top of it, and were walking away when the gust caught and overturned them, upset the food-bag, and carried off the missing portions of the cooker.

Fortunately, no permanent harm resulted, for the wind was still gusty, and, after a strenuous chase of half a mile, I managed to secure both the lid of the outer cooker and the large cover, while Browning and Dickason walked in and retrieved the bottom pan, which had been caught by an eddy and carried in much nearer the cliff. There is no doubt at all that if anything ever happens to any member of the Northern Party through over-carelessness with regard to wind, he will only have himself to thank, for we have all had warnings enough and to spare. The truant parts were bent a good deal after their escapade, and we never quite got this cooker to work easily again, but with a little extra care a meal could be prepared without accident.

All that night the wind remained very gusty from the south, frequently reaching force 12 in gusts. In between the gusts everything was still, except for a dull, rushing sound from the glacier, where the gale was pretty continuous. Suddenly this noise would swell until it was a cross between a roar and a shriek, and a gust would come rushing over the cliff immediately above us. Sometimes the wind would reach us, when we would get first a northerly indraught, and then our canvas would be strained almost to bursting-point by a southerly gust, while a cloud of snow and fragments of ice would rattle against the windward side of the tent. These gusts seldom lasted more than five minutes, and then they would drop suddenly and all would be once more quiet. Sometimes, on the other hand, the gust did not reach us at all, and we could hear the main wind tear past us and die away



in the distance, when our quiet would once more be disturbed by the subdued roar from the south end of the glacier, and we would lie uneasily waiting for the next blast. Speaking for myself, I find it much more difficult to get to sleep on nights such as this than when the wind is continuous and strong ; one is always subtly conscious of the coming gust and subconsciously bracing oneself to meet it. I think my feelings were shared by Levick and Browning, but I as certainly know they were not by Dickason, who lay peacefully snoring for the greater part of the night.

The following day we broke camp and returned to the hut to prepare for our next western journey. The going was pretty heavy for the first mile or two because all the snowdrifts had been covered with fine grit by the recent winds ; but after this we pulled the sledge some way out from the cape and reached a stretch of ice that was completely free from snow. We had had a strong southerly breeze behind us all day, and this, combined with the smooth ice, made the pace so hot that Levick, who was suffering from a strained leg, was obliged to drop out of the traces and get along as best he could by himself with the aid of his ski-sticks. After a mile or two of this it struck me we could improve matters still more, and after a halt of a minute to recover our breath we took the harness back on to the sledge and pushed it along, Dickason and Browning being on either side of it and myself steering it by the tent-poles, which projected very conveniently behind. From here to Seal Point we must have been doing some seven or eight miles an hour, and for a good deal of the time Dickason and Browning were riding on the sledge, while during one or two of the stronger gusts all three of us were riding at the same time. This latter condition did not, however, last very long, for the blizzard was not quite constant in direction, and a side gust caught the sledge broad-

side on, capsizing her and throwing Browning clean over the top of the load.

At Seal Point we halted for a while to allow Levick to catch us up and have lunch, while Dickason and myself, who did not feel at all like lunch when within sight of home and galled by the wind, chipped out the carcass of the crab-eater seal and lashed it on top of our load. After this we resumed our former method of pulling, and arrived at the beach at teatime. The crab-eater had made our load very topheavy, so, after one very aggravating capsize had followed on several partial ones which had been prevented by the sidesmen, we jettisoned the carcass within a few hundred yards of home, intending to leave it until Levick, who wanted to carry out a post-mortem examination, should be able to fetch it himself.





A SEA-LEOPARD'S HEAD.



A SPRING SLEDGING LUNCH.

## CHAPTER XI

### THE SECOND WESTERN JOURNEY AND THE ARRIVAL OF THE ADÉLIE PENGUINS

A contrast in pace—Pressure and capsizes—A new method of pulling—Photography on ski—New country beyond Cape Barrow—A siren and an avalanche—Treacherous ice compels a return—Signs of a general break-up—We survey the coast at the entrance to the bay—Heavy work collecting—A young Weddell seal arrives—The home of the Snowy Petrels—Return to the hut—The arrival of the Adélies—Mating—Fighting—Stealing.

ALL our preparations for the next journey were completed by October 3rd, and on the 4th we started away at 7.30 a.m. on our way across the bay to Point Penelope. If this day's marching could have been cinematographed the film would have been worth having, as showing the difference the iron runners had made to our travelling in the eastern and more windswept portion of the bay. The photographic party, Levick and Browning, who were accompanying us as far as the point, had a little less than 200 lb. on their 9-foot sledge, and yet they were hardly able to get along and certainly unable to keep up with us without constant help. We, of the main party, carried on our 10-foot sledge 1,000 lb. weight of food and gear, and were making a good pace with only two men, or at the most three men, in the traces. In consequence we were able to spare help for Levick's sledge, and the way we managed this in general was by sending two men to help pull their sledge until they caught us up, and then

borrowing back one of our own men until we had once again secured a considerable lead.

When within a mile or two of the point, we swung off a bit to the right and camped about a mile to the north, while Levick and Browning continued on their way and camped in the Abbey Cave. After dinner Campbell got out his theodolite and took lunar sights and a round of angles, while I took the two men and the sledge in to Penelope Point and depôté a fortnight's provisions and the iron-runnered sledge in the cave.

Levick and Browning were to remain here for a day or so and then to move slowly along the coast, photographing as they went. The most important part of their orders, from our point of view, was the killing and butchering of a seal, the meat of which was to be left in the cave for us on our return.

The next morning saw us start on our way up the coast, and by making straight for Cape Barrow we kept within the area affected by the southerly winds and thus made good progress northwards over a fairly hard surface, where the only trouble was caused by the belts of high pressure we were compelled to traverse. It was on this day that we changed our method of pulling and adopted the one which we have since always used amongst pressure-ice. Until now all four men had pulled from the front trace, and it was the business of the two wheelers to jump back in bad country and endeavour to prevent capsizes, but this had two or three disadvantages. The slackened traces of the wheelers, for instance, were themselves a source of trouble, for they were liable at any minute to catch behind a piece of ice and pull the whole party up with a jerk, while another trouble was that if the wheelers ran too far back they at once partly neutralized the pull of the front pair.

From now on in bad country the harness of the two front men was secured to the low loop of the sledge,



and then they had much more control over the direction of movement of the latter. The two rear men meanwhile attached their harness to the rear strut of the sledge, and this in a 12-foot sledge brought them a little forward of the middle of the load. With the aid of one of the straps they were then able to get a good sideways as well as forward purchase, and in this way we pulled, and even almost carried, the sledge over some very nasty places without a capsize. The one essential precaution which must be taken if this method of travelling is adopted is that the weight must be arranged so that the centre of gravity of the loaded sledge is as low as possible. If this is not so there is great danger of a broken limb from an unexpected capsize, while in any case the sidesmen must be constantly on the look-out so that they may not be caught napping when the sledge takes charge down the side of a steep sastrugi or down an inclined slab of pressure-ice.

The surface out here was much better than in the bays, and early in the afternoon we arrived opposite Cape Woodbar, left the sledge, and walked in to fetch the depôt we had left on the previous journey. It was on this occasion that we found our most conclusive proof of the entire absence of wind within Pressure Bay, for our sledge tracks of three weeks ago were not drifted up at all.

We camped that day about two miles beyond Cape Woodbar, feeling very pleased with our day's work, and when it is contrasted with our experiences on the previous journey it will be seen that we had every reason to be so. The temperature so far had remained obstinately below zero, ranging between  $-20^{\circ}$  F. and  $-28^{\circ}$  F., but the weather was beautifully clear and the cold combined with bright sun was really no hardship. It was not until the evening, when the sun dipped behind the Admiralty Range, that frost-bites became at all common.

By lunchtime on October 6th we were abreast of Cape Wood, the farthest point reached on the depôt journey, and a few hours later we got amongst the heavy pressure which surrounded Cape Barrow, the northern point of Robertson Bay. This looked from a distance as if it would be insuperable with loaded sledges, but as we approached it it opened out until we found that by winding about a little we should be able to pass it with little difficulty. It was when trying to take a photograph of the cape from amongst this heavy pressure that I first realized what tricks a pair of ski can play in the hands of a novice.

Every time we stopped to take a photograph or, for that matter, to take something off the sledge, the place looked as if an army had camped there for a week. Campbell was the only one of us who could be described as a ski expert, and the rest of us were tyros indeed, for we had had no snow at Cape Adare on which we could practise. The photographer's position, however, is the worst of all. In order to obtain exactly the view he wants it is necessary to look in the view-finder and try several positions, and this means either closing the camera each time and slinging it on his arm or walking along with the camera in one hand and the ski-sticks in the other. It is essential that he should get no snow in the interior of the camera or against the lens, and thus a fall might be fatal to the photography for the rest of the trip. As all our work so far has been done in heavy pressure, he has therefore to feel his way about very slowly and carefully, while every now and then it is necessary to walk round about twenty or thirty yards to avoid a sharply curving drift, up which he could not walk without the use of his sticks. All the time he has an uneasy consciousness that the rest of the party are saying, "Why the devil doesn't he get a move on?" or, worse still, are pitying him for his clumsiness or laughing at his efforts to preserve his





THE SHIPLEY GLACIER.



OUR HUT AND PENTHOUSE AT CAPE ADARE.

To face p. 169.

balance. Altogether the photographer generally feels very pleased when the ordeal is over and he rejoins the team, though the one advantage is that our balance on ski is rapidly improving through the practice which such occasions afford.

The pressure round Cape Barrow was negotiated without any great difficulty, and about five o'clock we rounded the cape and for the first time feasted our eyes on the scenery beyond. This was indeed worth seeing. The most prominent feature was an ice-tongue stretching out from the back of the cape itself and bounded on its northern side by a small island of green quartzite. The face of the tongue was a vertical cliff of horizontally laminated white ice some 90 feet in height, with very beautiful lenticles and bands of bright blue ice here and there. Between this ice and the cape a narrow bay was formed, and this was divided into an inner and outer bay by a spit of rocks about half-way down it. At the time when we pulled into this bay to camp the tops of the foothills were still shrouded in a light stratus cloud, but beneath this could be seen the bottom and part of the sides of two deep gorges divided by a perfectly faceted cliff. These gorges were only partially visible, but that portion of them that could be seen was much increased in grandeur by the deep purple of the shadow into which they were thrown by the cloud.

We camped well within the bay, and were soon enjoying a well-earned hoosh, which was disturbed, however, by a noise like a long-drawn-out hoot from a steam-siren, which gave me quite a shock, carrying my mind back to the time when the Western Party of the Shackleton Expedition had just escaped from the floe on which they had been carried out to sea, when we heard the same noise. We then attributed it to the killer whales which were playing in the sea, but it is impossible to believe that killers could have been

responsible for it here. From the fact that we heard it the next day associated with the gnawing of a seal, I should be inclined to put it down as the distress cry of the Weddell seal, which is known to have an extensive vocabulary. Because of this weird noise and the no less weird beauty of the bay we christened it Siren Bay.<sup>1</sup>

We seemed fated to be disturbed that night, for we had hardly gone comfortably off to sleep when a large ice avalanche awaked Campbell and caused him to rouse us under the impression that there was heavy pressure in the sea ice near the tent.

The following day we spent some hours of the morning examining the face of the ice-tongue and taking angles and a true bearing for the survey of the coast, and so did not start until nearly midday. In spite of the late start, however, we managed to make good progress in a direct line towards another ice-tongue we could see intercepting our course, and finally pitched camp on a piece of level ice about seven miles north of Cape Barrow. We had noticed the black and sodden appearance of this ice before camping, but it was not until we were lying in our bags after dinner and heard a seal gnawing underneath our tent that it struck us the ice might be inconveniently thin. Campbell then called out to Abbott, who was still outside, and asked him to make a hole with his ice-axe and find how thick the ice was, and soon to our amazement he told us that we were camped on about 8 inches of slushy ice.

Campbell decided to have the camp moved at once, the more especially as the wind appeared to be rising, and while we were putting on our marching clothes Abbott was dispatched to find a thicker place. He cleared away the snow from two or three places only to find the same slushy ice, and it was not till he had gone

<sup>1</sup> The glacier of which the ice-tongue described above forms the termination has since been named the Shipley Glacier, after the Master of Christ's College, Cambridge.



a quarter of a mile that he came to a slightly thicker place, and here I joined him. This proved, in its turn, to be only 18 inches thick, and so Campbell and I walked on for another quarter of a mile. We finally found one small pan where I was able to pick down for fifteen inches without letting any water through, and we camped for the night on this.

In the morning we made a still more thorough survey of the ice near here and farther to the north, but found everywhere the same sodden, unsafe stuff, while at one place Campbell could push his ice-axe through the slush without any trouble.

To add to this, every pressure-floe was surrounded by a ring of new ice or still wet slush, and it was quite clear that the August break had extended over here and that the ice we were travelling on was only a loosely cemented pack, the individual pieces of which were some of them scarcely strong enough to bear our weight. This meant that the first rise of temperature of any long duration would open up this ice by causing the rapid melting of the thinner pans, and the chances were about ten to one that if we got caught beyond the ice-tongue in front of us we should not get back before next season. In the face of these considerations, Campbell decided that it was best to turn back. Later events completely upheld the wisdom of this decision, for from the top of Cape Adare a month later there is little doubt that we could see open water stretching right in to Cape Barrow and the Shipley Glacier.

As soon as we had definitely decided on our future plans, therefore, we broke camp and made our way back to our old camp between the tongue of the Shipley Glacier and Cape Barrow, and here we stayed for three days. We arrived at our camp that night all of us tired out and somewhat out of temper, both with the events of the day and ourselves, though I should say here that we all recognized even then that we could

have done nothing else. Had we persisted there is little doubt that we should have cost Captain Scott a relief expedition, though we thought the chances were that we should have been able to survive the winter without too much hardship.

On the next day I started away from camp on ski early in the morning in an attempt to find Levick and Browning and bring them on here to do some photography. I first skied to our depôt at Cape Woodbar to find if they had been there, but without success, and afterwards I chased them to Island Point, where I came across a camp which had evidently been made on their way home. As it was little use and not too safe to wander farther away from the tent, I then returned, calling for some specimens on my way, and coming across traces of another camp at the eastern end of Cape Woodbar.

During the next day or two we examined the coast for some way north of Cape Barrow and secured many specimens of rocks and many interesting ice-notes. The rocks here, as everywhere else I visited along the coast, consist of the steeply dipping green quartzites, which are seamed with lenticular veins of quartz and calcite. There are no metallic minerals in these veins, however, and the only interesting find was a bright, carmine-coloured mould, growing on the sides of the joints of the cracks, which proved to be a unicellular plant.

Signs of bird life were quite common now, and flocks of Snowy or Antarctic Petrels were constantly flying about overhead. We were already sure that these birds nested in the neighbourhood, for Borchgrevink had secured a number of eggs, and later in this journey we secured ample proof that all the caves along this coast are haunts of the Snowy Petrel. In one cave which I examined myself there were as many as fifty or a hundred bodies lying about amongst great masses of





WEDDELL SEAL AND YOUNG.



A SEAL-HOLE.

rock, and there seems no doubt that the death of the birds had been due to an avalanche in the nesting season. Another cave visited by Levick and Browning was named by them the Bird'snest Cave, while in several smaller ones the remains of petrels' eggs were found.

On October 11th we left Siren Bay and pulled over to Cape Woodbar, and here we camped for a couple of nights while I examined the coast of Pressure Bay. The greater part of these two days was spent by myself collecting a few specimens from the rock bluffs within the bay, for the surface was absolutely fiendish. Although on ski, my legs were buried to the knee in the loose snow, and the only times I saw the points of my ski were when I raised my feet to turn round. Every step I made, therefore, I had to lift not only my foot and a half-dozen pounds of ski, but also a dozen or so pounds of snow, for it was impossible to push one's ski through the snow without lifting them. To add to my troubles on the first day, I walked for some time on a concealed overflow of sea water near a crack, and it was only the increasing difficulty of moving my feet at all that warned me of this. By that time the ski were clogged with an inch or two of ice, which I never properly got rid of during the morning.

On the morning of the second day at this camp a Weddell seal, which had been lying near the icefoot since we arrived, gave birth, and we gave this youngster a warm welcome, for he was the first real sign of returning summer. Immediately after his arrival the temperature jumped up to zero, and it never dropped below again except for a few hours at a time. After this, real spring sledging was over, our bags began to dry, and soon we were enjoying our nights more than our days. This is perhaps a very good discriminating test between spring and summer sledging. If a man-hauling party enjoy the time they are in harness better

than the hours they are in their bags, it may be reckoned a pretty sure sign that spring or autumn temperatures still hold sway.

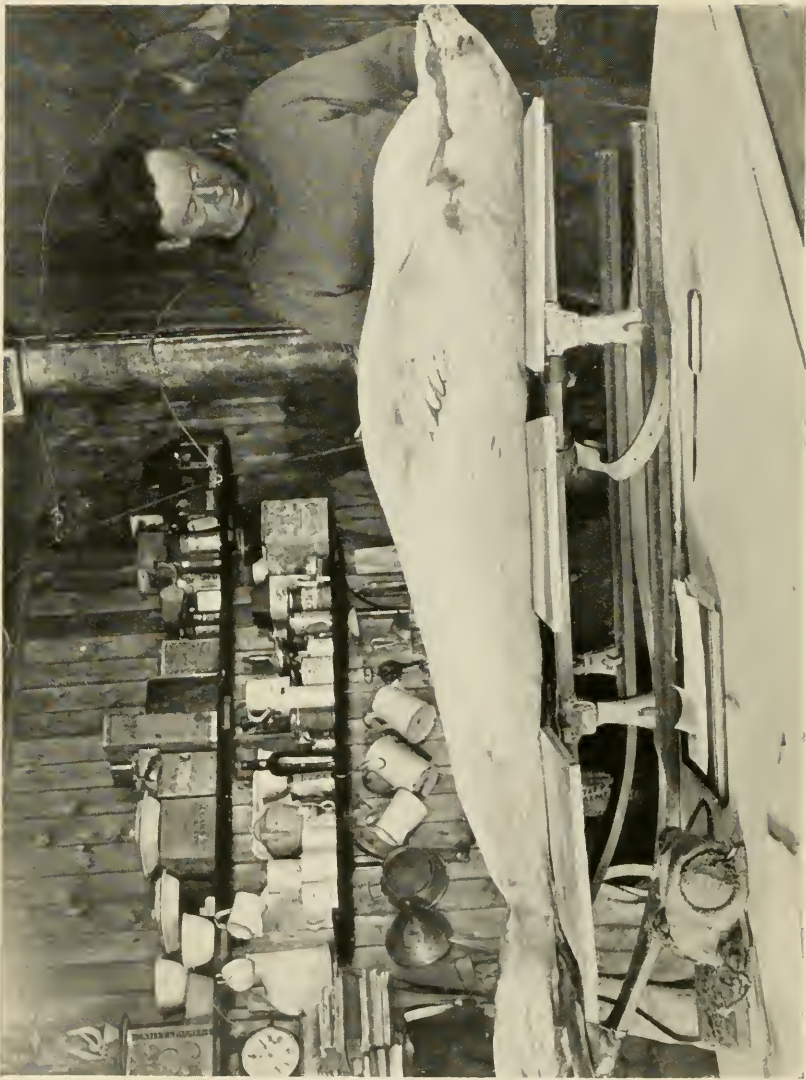
On the 13th we again broke camp, and made our way to Pharaoh Island off Island Point, and here we were held up for three days by a wind which interfered with our collecting and surveying. Here, also, were two or three Weddells with their young, and the mothers objected very much to any close examination. We found here that the later gales had swung in much closer to the land than any before, and the surface was so improved in consequence that we decided that it was worth while to try and make the trip to Penelope Point across the entrance to the bay without making a detour in order to strike harder ground. This we therefore did as soon as the gale eased up enough to allow us to complete our survey work, and on the evening of the 17th we camped once more in the Abbey Cave. In the cave we found our depôt and the sledge, and behind this were the remains of two seals, the result of Levick's kill, and these were a very pleasant change after a fortnight's pemmican.

The 18th we spent on a survey of the southern half of Relay Bay, and on the 19th we took our sledge with nearly all the provisions and depôté it at a berg about halfway between the Dugdale Glacier and Penelope Point, intending to call for it later on when we came down to do some work at the back of the bay. On our way back we saw our first skua, which had evidently been attracted by the seal carcasses, and I think he was very much surprised at the amount of excitement he caused.

Now that we had depôté most of our weight and the 12-foot sledge, the trip across to Cape Adare was a mere pleasure jaunt, and we arrived in there, much to Levick's surprise, well in time for tea. During the day we counted at least twenty seals in sight of our course,







READY FOR A POST-MORTEM EXAMINATION.

and as we approached the shore we saw that the sea ice was seamed with the tracks of myriads of Adélie penguins, while when we were yet a long way from the beach we could hear the cheery sound from the rookery.

Levick and Browning had been back a week, and once again they had only just made the hut in time to escape a blizzard, which had lasted several days. Since their return they had been very busy, the post-mortem of the crab-eater seal had been carried out, an Emperor penguin which had arrived had been chloroformed and skinned (on my bedstead), and already Levick had started on a series of systematic notes, which are probably the most thorough that have ever been made on the habits of the Adélie penguin.

Once again a day sufficed to settle us down to the ordinary routine, and I think the chief charm of this spring and summer consisted in the contrast to spring sledging afforded by these short spells at the hut. The chief feature of interest during these days was the continual stream of penguins which extended without a break from the north end of Cape Adare to the rookery, all of them hurrying to found homes and families. Beyond the Cape the bands were more scattered, but all had their faces turned steadily beachwards, and only a few showed enough individuality to step out of their way and examine the strangers.

The whole of the sea ice was patched with their tracks, and in places the snow in depressions had been trodden into slush. Abbott said, when he returned from a visit to the top of the cape that morning, that he could distinguish the column for at least three miles, and that they were pouring in in undiminished numbers.

The rookery itself was already a very hive of industry, with all the preliminaries which precede the business of mating in full swing. Cocks and hens that were already suited were building their nests, and the usual

comedies of purloining and repurloining stones were going on in every direction. The nests were in little colonies numbering from a score to a few hundred birds, and were all built on the little knolls and prominences, from which, as the rookery must be overcrowded to force numbers of birds to nest on the sides and cliffs of Cape Adare, I augured a very damp beach during times of thaw in the summer.

As yet they did not interfere with us much, and none were nesting inconveniently near to the hut, though observation parties occasionally sauntered up the drifts to leeward of the hut and looked in through the window. It was very rare for an individual to attack us, though our passage through the rookery was invariably heralded, accompanied, and followed by a stream of hoarse curses. Occasionally one more pugnacious than the rest, or suffering perhaps from indigestion or a bad liver, would leave a nest many yards away, make straight for a man's legs, catch hold as high as he could reach up the legs, and then hang on and beat a lively tattoo with his flippers.

The most curious thing about them at this time was their aversion to the sledge on which we fetched our ice. They must have taken it for some sort of a sea-leopard or killer whale; for while they treated a man with contemptuous indifference, mild curiosity, vociferous contumely, or pugnacious hostility according to their disposition, they divided in waves before the sledge, leaving nests vacant for twenty or thirty yards on either side of the track.

It was noticeable that each new band was greatly fatigued on arrival, so much so that the majority settled off to sleep in a recumbent position immediately after securing a site for their nests, while hundreds of them remained near or outside the icefoot apparently satisfied with having reached their destination and feeling willing to chance finding only indifferent sites left for their choice.





THE PENGUINS' PROMENADE AT CAPE ADARE.



In a few days the rookery began to look quite full, and still the stream was pouring in from the sea ice. At first there was very little serious fighting to be seen, but towards the end of October there seemed to be a great excess of cocks over hens, and it was then that the quarrels mostly arose, nearly all of them being the results of attempts made by the unattached cocks to secure mates at the expense of the older inhabitants. Two cases of injured birds I remember in particular, as they illustrated very well the different methods of fighting. The one was a young cock who had blood trickling down his flipper and a great red smear across his front where he had swung his flipper against the white feathers of his breast, and the other was a hen who had had one eye pecked out and was very much cut about the head. The birds which are actually sitting on their nests usually confine themselves to fighting with their beaks, while those that are off duty make great play with their flippers.

It is surprising how far these birds will walk for building materials. I saw one penguin carrying a stone a good fifty yards. He put it down and walked off after another, and a neighbour immediately appropriated one of his "bricks," but he dropped it like a hot coal and pretended to be looking at the weather when he saw the rightful owner come wandering back unexpectedly. One couple made a vigorous attempt to establish themselves on the rubbish-heap, but were much annoyed at the frequent avalanches and floods with which they had to contend. They held out bravely for some time, but were finally obliged to pack up their household gods and depart.

## CHAPTER XII

### TWO SHORT SUMMER SLEDGING TRIPS

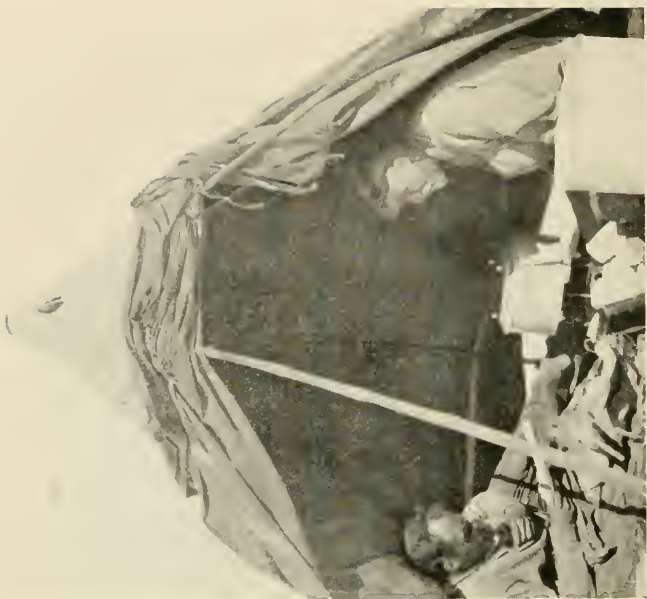
Trip to Sir George Newnes Glacier—Gales—Climbing in finneskoe not recommended—Visit to the Duke of York Island rookery—Eggs at Cape Adare—Casey's Court—The pirates of the air—Work at Duke of York Island—Trip to Penelope Point—Snowy Petrels—Campbell returns to Cape Adare—Adoption among Weddells—End of our last sledge trip.

AS we wished to make the most of the time when we felt that we could still trust the sea ice in the bay, Campbell soon dispatched another party to do survey work. On October 28th, accordingly, Levick, Browning, Dickason, and myself left Cape Adare for a week's work round Sir George Newnes Glacier. The trip down was uneventful, and the same evening we made our camp under the ice-cliff of the glacier after an easy journey of twenty-two miles over ideal surface for the iron runners. The sea ice all round our camp was strewn with pebbles up to half an inch in diameter, which must have been carried by the wind from the moraines on the glacier, and were a testimony both to its force and the constancy with which it must blow. To the south of the camp the glacier rose steeply in a series of glorious ice-falls, while to the west the cliffs rose to a height of 3,000 or 4,000 feet, and in one place a gorge had been ground through them by a small tributary which joined the main glacier near its face. Along the foot of these cliffs a long ridge of moraine material showed that





AN ANTARCTIC GLACIER STREAM.



SUMMER SLEDGING.

formerly the Newnes Glacier extended much farther to the north into Robertson Bay.

Our work at this glacier was interrupted very much by wind, but the temperature was fairly high, and the trip was pleasant from beginning to end. On the 29th Levick and I made a complete photographic record of any structures which were visible in the face of the glacier, and in particular we secured snaps of a very beautiful gorge which had been formed by the recent calving of a large piece of the glacier. Browning and Dickason, meanwhile, spent the day wandering over the screes and the moraines, and they brought back one piece of quartzite which they declared to be full of gold. The specimen proved to be very rich in iron pyrites, but I think they are even now very sceptical and inclined to think that I was hiding my enthusiasm on purpose.

The following day we were confined to our bags by strong wind and drift, but on the 31st we divided into two parties, Levick and Browning going to inquire into the present state of the rookery of Duke of York Island, and Dickason and myself attempting to climb the hills to our right. Unfortunately, we only had our soft fur-boots with us, and so the day's climbing, though successful, is not one we are able to look back on with agreeable memories. The first 1,500 feet was over the loose, angular rubble of the screes, which, though fairly stable, moved just sufficiently to make things very unpleasant for our finneskoe-shod feet. We then came to much harder but much more pleasant climbing over rock ridges, which cropped out above the surface of the rubble as massive squarish blocks of the green quartzite, dipping steeply towards the south-west. This, again, was capped with basalt within 700 feet of the top, and here again the walking became easier but much more agonizing. It was the tenderness of our feet still more than the lateness of the hour which caused us to return soon after we reached the top at 3,600 feet,

for we knew that the worst time was still to come when we should be slipping and sliding over the scree on our way down, and our soles were already burning as if they had been flayed. We had a short walk only on the top, therefore, and then, while Dickason sat down on the lee of a boulder and lit his pipe, I collected a fair selection of the local rocks. While collecting I slipped on a piece of smooth, steeply inclined rock, and fell with my head against the corner of a boulder, and as I had only a scarf wound turbanwise round my head, the blow on my bare skull knocked me out for a few seconds. After a few minutes' rest, however, I recovered, and was able to proceed on my way down the hill, and in another three minutes we had both forgotten all about my head, for our feet took all the sympathy we had to spare and could have done with a good deal more. From where we had reached the land sloped gradually up to 5,000 feet and then a ridge hid everything beyond.

We arrived back at camp in good time for dinner, and soon Levick and Browning walked in. They reported that the rookery at the island contained some one to two thousand penguins, and that these were much cleaner and better behaved than those at Cape Adare. It seems that penguins, like men, are liable to deteriorate through overcrowding and living under slum conditions, though it may be that the better qualities of these birds are due to the fact that only the stronger characters have the pluck to break away from an old breeding-ground.

Certainly after my old friends at Cape Royds, the penguins at Cape Adare, and especially the overcrowded colony near our rubbish-heap which we call Casey's Court, appear to be very degenerate, and to spend all their time fighting and amusing themselves.

On November 1st we broke camp and sledged to Warning Glacier, where I wished to obtain some more



photographs and some ice specimens, and here we were detained for two days by another gale. As we had intended to be out for one week only, this meant that our provisions were running short, and we were obliged to have our meals without pemmican. Fortunately, on a short trip like this, it is very seldom that any one can eat his full ration of biscuit, and so the first week's biscuit can generally be relied on to last eight or nine days. On the fourth the wind eased sufficiently for us to get under way, and with the iron runners we were able to make Cape Adare in well under the six hours. This was not bad travelling when one realizes that we had with us some 300-400 lb. of rock specimens.

On our arrival at the hut we found to our delight that penguins' eggs had already made their appearance, and from this time they became a regular article of diet, while we collected several thousands ready for the next year should we not be relieved. The penguin lays an egg which much resembles a duck's egg in appearance while rather surpassing it in size, and which has a small yolk and a transparent white. They are always a distinct addition to our diet and taste very like the egg of the domestic fowl.

Casey's Court, late as usual, had refused to lay until the morning we arrived, and when at lunch-time that day we heard an unusual noise, we rushed out to see what was the matter, and saw one corner of the court in the most frightful confusion. Twenty or thirty of the birds were mixed up in one glorious fight, and a few yards outside the colony lay the cause of all the trouble—an egg encrusted with mud, frozen hard, and with a crack right down the middle. It was impossible to be certain of the cause of the trouble, but we inferred that the husband must have come home, hurled the egg out of the nest, and then commenced to beat his wife. It was impossible to hit any one in this overcrowded

colony without involving other couples, and so a general rough-and-tumble fight was the result. Next to these degenerates, strangely enough, are the model birds of the rookery, a colony of fairly clean penguins, who spend all their time building huge nests, the stones of which are as often as not appropriated by the vagabonds from Casey's Court.

With the appearance of the eggs the skuas are becoming very cheeky. These birds hunt in couples, and one entices the parent penguin off the nest, when the other immediately swoops from the air and takes the unfortunate bird's egg. One's main feeling on seeing such a drama is sorrow for the penguin, but it is impossible to refrain from admiring these pirates of the air. They are a type of everything that combines grace and independence of character with a taste for freebooting.

On November 7th a party again left the beach for the back of the bay, and this time Campbell himself went in charge, while Levick was left at the winter quarters to continue his observations on the penguins. This time our objective was Duke of York Island, and on our way we made a detour to pick up the depôt we had left at the berg off the Dugdale Glacier. We reached the island the same evening and as usual found a stiff southerly breeze blowing.

This time it was evident that if we were to do our work we should have to ignore the breeze unless it carried drift or was very strong, and accordingly we made pretty long excursions on most of the next few days. The object of this trip was to complete the survey of this portion of the bay and examine the seaward end of the Sir John Murray and Dugdale Glaciers.

On the 9th Abbott and myself took our lunch and walked over to the cave at Penelope Point, and from there into the back of Relay Bay, where I wished to obtain a series of photographs of a berg which had calved from the big glacier. This berg must have



OLD THE ANTARCTIC BUCCANEER—THE SKUA GULL.



A PENGUIN ON ITS NEST.



dipped right below sea-level when it calved, and a good deal of sea ice had been carried up on its surface to heights of 50 and 100 feet when it rose again. We had a very pleasant walk and the day was enlivened by the constant chirping of the Snowy Petrels which were nesting in the cliffs along the coast, and which have a call which reminded me strongly, now of a cricket and now of a corncrake. There were several pairs of these birds nesting at Crescent Bay on the island near our camp, and they seem usually to make their nests either in a cave or between two blocks of the quartzite which have fallen against each other so as to make a natural rock tent. If molested they spit continually, exuding a yellow fluid which has all the appearance of gall and smells very unpleasantly. One bird which Abbott caught covered its captor's hand and itself with the stuff so thoroughly that it was dyed an orange colour when finally released.

Our chief excursions from Duke of York Island as a base were to the raised moraines at the junction of the Dugdale and Murray Glaciers, to a dry valley which had formerly been filled by the ice from the latter, and to the Newnes Glacier to repeat the photographs we had already taken last journey, but which had many of them been failures.

As this last trip meant a stay away from camp of several hours' duration we were obliged to wait for a fairly fine day before undertaking it, and as Campbell's work was finished he decided on November 14th to return to the cape. We therefore determined to depôt all our heavy gear on the 12-foot sledge about halfway to the cape, and then leave him to continue his way home and return ourselves to wait for better weather. That morning, therefore, we took the sledge out some nine and a half miles, and Campbell took his sleeping-bag and theodolite and walked home.

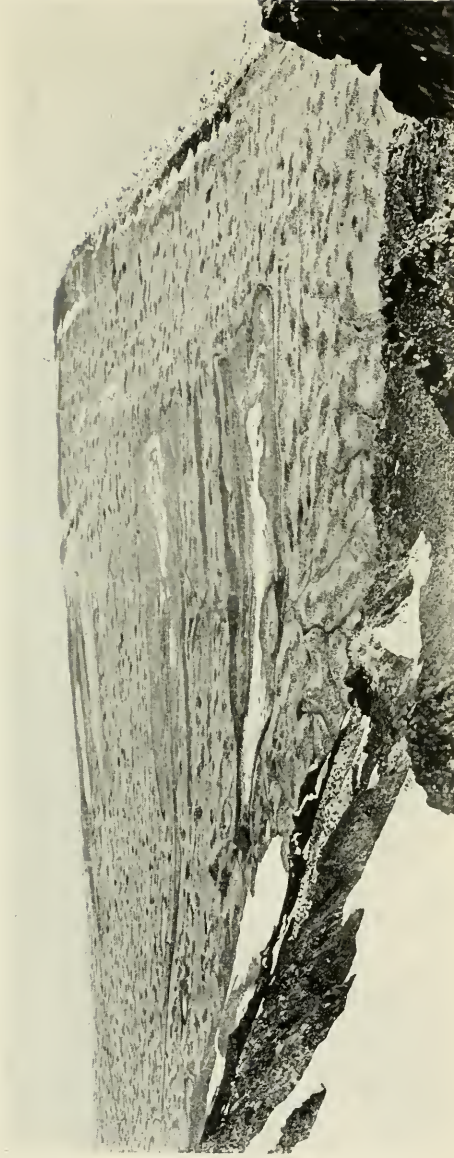
It was on this trip that we passed a young seal which

had had its eyes picked out by the skuas and had then frozen to death.

There were several seals with young near the tide crack at Duke of York Island, and we saw one case of adoption such as I had often heard of but had never seen. It appears quite a common thing for a youngster which has lost its mother to adopt another one which is conveniently near. In this case the mother appeared to be quite reconciled to the part, and we were witnesses of a very pretty comedy when she was teaching the younger calf to swim. The old seal was standing upright in the water with head and shoulders above sea-level, and with her head at right angles to the body. Her skin was smooth and glistening, and she looked for all the world like the pictures of some of the big anacondas or water serpents of the Amazon. It is not to be wondered at either that Borchgrevink took the Weddell seals for sea-leopards, for when they are wet it would take an expert to tell the difference. The older youngster was already in the water, and by calling and touching the muzzle of the other was trying to entice him in. As we watched he took the decisive plunge, but did not seem to like it much. We stood for some time after this and watched them playing round the icefoot, and never had we been so much struck with the grace these animals can exhibit in the water. On shore they look like huge black slugs and their movements are painful to watch, but in the water they are transformed and must be a match for most creatures.

On the 16th the wind eased up enough to allow us to pay our visit and do our work at the Newnes Glacier, and on the 17th we packed up our gear and sledged into Cape Adare, and so ended our sledging season for this year.





THE ADÉLIE ROOKERY AT CAPE ADARE.



## CHAPTER XIII

### AN IDEAL ANTARCTIC SUMMER

Penguin fights—"Hooligans"—Comedies at the water's edge—The "Crescent Bay mixture" of tobacco and tea—Birthdays, especially variable ones—The *Adélie Annual*—"To Let"—"The Barrow Dip"—Trouble in the rookery—Flooded out and iced in—Massing of the penguins on the sea ice—The first killer whale—Insects—Sea-leopards—Disaster among the penguins—An hour in the sun—Penguins leaping on the icefoot—Proposals of friendship or marriage—A catastrophe wipes out several colonies—Rescue work—Preparations for summer sledging—Our camp on Cape Adare—Arrival of the ship—We leave the cape.

THE weather during the next six weeks while we were waiting for the arrival of the *Terra Nova* was almost perfect, for we had day after day of bright sun and very little wind. The penguins afforded us a continual source of amusement, and the latter half of this November and the whole of December were, therefore, amongst the pleasantest months of our stay in the Antarctic.

The fights amongst the penguins continued to be as furious as ever, and they must have had a very disastrous effect on the eggs. These were frequently to be seen rolling about by the nests in which they should have been reposing, for as much as fifteen to twenty minutes, while the cocks, who had been left in charge while their partners had gone to feed, were fighting to their hearts' content. One distinct feature of the rookery at this time was the number of unattached penguins that were walking about, all more or less

dilapidated, perhaps with only one eye, but always on the look-out for a row—regular toughs or “hooligans.” One thing one particularly noticed here was the comparative quiet compared with the noise at Duke of York Island. It seemed as if in penguins strong individuality was closely connected with strong lung development.

On November 19th we noticed that the ice to the north of us was loosening a good deal, and Levick and I walked to the edge of the ice to take a photograph of the lead, and while there we saw a very amusing comedy. We observed a party of forty or fifty penguins approaching from Cape Adare. They would hurry along with every appearance of haste for about a hundred yards, and then stop and gossip until one, more energetic than the rest, would give them a lead, when off they would start again. The real fun began, however, when they reached the ice, for each was apparently anxious for some other to go in first. I have sometimes seen a group of boys going to bathe on a sharp autumn morning behave in exactly the same way. One after another would go the round of the group fighting in a very playful way compared with the way they inflict punishment on their rivals in the mating season, and distributing his attentions impartially amongst all comers. The object of their efforts seemed to be, if there was any object, to force their opponents towards and into the water, and on one occasion a particularly active individual succeeded in driving another over the edge of the ice and into the sea. Before you could say “knife,” however, he was out again several yards away and hurrying to join his companions, grinning, if only a penguin were able to grin, all over his face. Such was the rapidity of his appearance and the distance to which he had swum that it was almost impossible to believe he was the same penguin, but I knew him again by a peculiar-shaped dab of guano on his neck and chest.



A HIGH DIVE.





At last a wave of enthusiasm seemed to strike them all, and they surged forward simultaneously on to a projecting angle of rather insecure ice, which immediately began to settle under their weight. I thought then that I should be ill with laughter, for directly they felt the ice heave they all turned in a panic and rushed for the shore, swearing and cackling, hitting each other, and tumbling over each other in the most ridiculous manner in their anxiety to reach the firm ice before the piece they were on gave way altogether. It is difficult to understand their behaviour, unless it requires some resolution before they can summon up courage to enter the water after their long stay on shore. After they had regained the firm ice they stood still for some minutes chattering hard, and then one seemed to brace himself together, as if he were saying, "Well, here goes!" and dived into the water in one movement, to be followed by a continuous stream of penguins until there were only half a dozen left. They followed one another in with such regularity and so quickly that the noise reminded one exactly of that made by water when it is being poured out of a narrow-necked bottle.

At this time and until the end of the month when we were preparing for the advent of the ship there was very little work for the three men, for the scientific observations were now so restricted that I was able to manage most of them myself. They had, however, plenty to amuse them, and the chief rivals of the penguins were the miniature rifle range and an experimental tobacco factory. As a non-smoker I am very liable to overlook mention of this essential part of our equipment, but our needs in this respect as in every other were well supplied, and large quantities of leaf tobacco as well as some plug and cut tobacco had been landed. The latter, however, had run out entirely shortly before this time, and as some of the smokers were unable to smoke pure ship's tobacco, various attempts at sweeten-

ing it and making it less strong were now in hand, and each of the men had his own favourite mixture.

The one I remember best, the "Crescent Bay mixture," was one invented by Abbott and Dickason when they ran short of tobacco at Duke of York Island, and thus was really an emergency tobacco. It consisted, I believe, of one part of ship's tobacco to two parts of tea-leaves, and was declared by the smokers to be a very efficient substitute. As an unprejudiced observer, I cannot but say that its smell was certainly about one degree less vile than that of pure ship's tobacco when smoked in Dickason's old pipe, the latter being a battered and smoke-begrimed old veteran, which, I should imagine, was most probably brought over by Sir Walter Raleigh with his first plug of tobacco.

November 25th was Dickason's birthday, and as usual we celebrated the occasion with a special dinner and a tot in which to drink his health. This same day Browning told me that his was on January 27th, and the two dates are interesting because during the next year, which must have been a record leap-year, the six birthdays of the party all fell between March and September. I have since wondered whether it was worth while calling the attention of the Astrological Society to this discrepancy, but on the whole I fancy it is more a case for a naval chaplain.

Now that we had more spare time on our hands, it seemed a good time to endeavour to produce some sort of a magazine or paper which should be modelled on those of previous expeditions. We therefore called a meeting of authors, at which contributions were promised by all hands, and I was appointed editor, and so the *Adélie Annual* came into being. We did not pretend to a high literary standard, but the articles were mainly topical and so interesting to ourselves, and the paper was the cause of much amusement. One poem, which was sent to me signed "Bluebell," was



MATES.



WEDDELL SEAL AND YOUNG.



an advertisement of our hut and enumerated its points very well :—

### TO LET.

The late inhabitants, with much regret,  
Beg to announce this hut is now to let.  
They grieve exceedingly they cannot stay,  
But urgent business calls them away.  
The hut and furniture, thus on the market,  
Remains for any one who cares to shark it,  
And if you care to walk in, I dare say, gents,  
You won't be worried by no dashed house agents.  
There'll be no rent to pay, no tax or poor rate ;  
You won't be fussed, or called on by the curate,  
Whilst duns will leave you quiet for a space,  
Being positively strangers to this place.  
A place, in short, a prince might well inhabit.  
Look ! what a chance ! and no one here to grab it.  
Each time the wind blows plates rain off the shelves,  
For, with the hut, we put them up ourselves,  
And consequently we're prepared to state  
Each plank is split, and not a nail's in straight.  
This latter dodge was ours, and quite a great one  
(A crooked nail sticks faster than a straight one)—  
It's all yours for the asking, every splinter,  
But hurry up, it won't last out next winter.

Another poem by the same author deals with science from the explorer's point of view.

### THE BARROW DIP.

The day being calm, we take occasion  
To make magnetic observation  
With Poles direct and B end dipping,  
We don't care how the frost is nipping.  
With instrument first facing east,  
Who minds such hardships in the least ?  
So merrily we crack our quip,  
The while we work the Barrow Dip.  
And, stamping on the creaking snow,  
Shout, " Right away, boys ! let her go ! "

With face of instrument now west  
The little needle seems possessed.  
Ye gods! the fun is waxing warm;  
This must be a magnetic storm.  
We stop to find the reason and  
Find some one's been and kicked the stand.  
For though a tripod was at school  
Declared to be a three-legged stool,  
This toy would seem to have indeed  
Enough legs for a centipede.

The instrument being once again  
Adjusted on a level plane,  
And the offender roundly cursed,  
We start again with poles reversed,  
And watch the swinging needle bend  
Its upper then its lower end,  
And noting twice which way it lean,  
First take the sum and then the mean.

The worker's hands are numb with cold,  
His nose a wonder to behold.  
All this we've done, but don't forget  
The fun's not nearly over yet,  
Because there still remains, of course,  
The three times cursed magnetic force.  
The jest this time is much increased  
(With both the needles facing east).  
We fix (as we are told to do)  
The north end near the tangent screw,  
Nor do we heed the chilly air,  
But note each reading down with care.  
Then on our frozen limbs we rise,  
And fill the air with joyous cries.  
We'll go and make a huge repast—  
The beastly thing is done at last!

During the winter we had not been much troubled with snow except at the beginning of blizzards, but now the snowfall became heavier, though storms were not very frequent, and the effect of these on the rookery was disastrous. Several days after such a snow-carrying wind a walk round the rookery would reveal distress







PENGUINS SUNNING THEMSELVES ON THE ICEFOOT.

everywhere. The nests on the low ground would often be completely under water, and here and there one would see the parents sitting stolidly on their eggs with the water up to their breasts, and the eggs, of course, stone cold. In other places occurred deserted nests with the eggs floating in the water which filled them, while many such nests had had their eggs removed by the skuas and carried off to the neighbouring screes, where they had been cracked and eaten. In places where the nests were protected from the wind, on the other hand, heavy snowdrifts would form, and the birds would be shut in by a hard icy shell for days together. On many such nests we found the penguins still sitting on the eggs, and looking through a small hole just level with their heads. One had his mate waiting for him and very indignant at not being able to come home. When I was opening up the drift, which was frozen to ice immediately round the body, the bird outside seemed to be under the impression that her partner had been skulking on purpose, and caught hold of him by the head and shook and pecked him unmercifully. I was obliged to interfere, and upset the aggressor with my ski stick. When I released the cock, however, they were quite friendly, and a very pretty comedy took place when he was persuading her to take his place on the nest and thus to leave him free to get a meal.

Now that the eggs were laid and the penguins fed pretty regularly, the most characteristic sight of the beach was undoubtedly the massing of huge bodies many thousands strong on the sea ice to the west of the beach, from which they took their departure on their fishing trips. There were, of course, smaller bodies, and many cases of individuals who preferred their own society, but crowds were certainly the rule. The rookery presented a very different appearance now from the animated scene during the actual pairing season,

for, with a few exceptions in each colony, one saw now only the black backs of exemplary parents varied by the white waistcoats of the protesting families immediately in the route one was following.

Here and there were erect penguins just off to or returning from the fishing, and it was easy to tell which class they belonged to, for the purity of their white breasts after the bath was soon sullied by the universal dirt of the rookery. Occasionally, as one strolled west from the beach, one met bodies of penguins twenty or thirty strong heading for Duke of York Island. These birds must have a very high sense of duty and of parental responsibility to make them leave the delights of the fishing-grounds at Cape Adare for their eighteen-mile tramp home.

On the afternoon of November 30th Levick saw the first killer whale of the season. He rose quite close to the beach amongst crowds of penguins, who did not seem in the least affected by his presence, and I still maintain my original belief that the penguin is a match for the killer in the water. If they were easy to catch it would only be logical for the killers, instead of cruising the seas in chase of stray seals, to wait off the entrance to the rookeries until in a few years they had exterminated the Adélies.

December 2nd was an important day in the zoology of the party, for it was on that morning that, while collecting on the slopes of Cape Adare, I first found immense numbers of small red insects living amongst the moss or sheltering on the under side of small stones. In the afternoon also Campbell shot two sea-leopards, and by means of the *Great Western* the floe they were on was anchored to the shore and their skins were secured. These were the first of eight or nine that were shot here during the summer, and when we had strolled along the icefoot a few times, and had seen these ferocious-looking beasts rising head and



A SEA-LEOPARD.





shoulders out of the water to look for penguins on the icefoot, or lying concealed beneath this foot, a good deal of what had mystified us in the behaviour of the birds was made plain. Here, for instance, was the explanation of the unwillingness to be the first to enter the water, and of the craned necks as those on shore watched to see the fate of the pioneer. That these leopards destroy many hundreds of penguins yearly we had ample proof. On two or three occasions penguins were observed with the mark of the leopard's teeth, and one bird had lost the whole of its breast skin. We also several times saw a leopard chasing his prey in circles in the water, or tossing the body in the air and playing with it as a cat will a mouse ; while one which we killed had the remains of no less than twelve Adélies inside him.

After tea on this same evening I walked down to the shore and lay for an hour or two in the sun on a warm bed of basalt pebbles, and with my head pillowed on a rounded rock, and watched the pack move steadily eastwards and round by the edge of the cape. Here it was caught by the incoming tide and formed a second outer line sweeping westward. It was one of those perfect days which will always be recalled with a mixture of pleasure and regret by any one who has had the good fortune to spend some part of his life in the Antarctic.

It was quite calm and the sun was very bright, and the air felt soft as velvet and as exhilarating as wine. The sea was calm and unruffled, and the constant procession of brash ice and of small, uneven-shaped and uneven-contoured floes was soothing alike to eye and brain. In the near distance were several majestic bergs, varying from the typical tabular Antarctic berg to weathered bergs of many fantastic shapes, while beyond them stood on the one hand the bluff cliff of Cape Adare, and on the other hand the rounded outlines

of the snow-covered peaks of the mainland, which never had looked so desirable as now that we knew it was not to be our lot to explore them.

It was undoubtedly the weather, however, that gave the scene its charm on this and many another day of this summer. One has only to see the same scenery in almost all its details (varied only by a choppy and angry sea) in a howling gale, and with part of the picture alternately veiled and revealed by clouds of drifting snow, and one has the acme of bleakness and wintry desolation.

We were having abnormally high and low tides just now, a fall and rise of about 5 feet, so that in places at low tide a comparatively hard beach was left showing beyond the seaward edge of the icefoot platform. At low tide, therefore, the penguins found it impossible to return from fishing, and they had to wait till the icefoot became more accessible. While I had been watching the ice the tide had gradually been rising, until the penguins were once more able to alight on the icefoot, and now a continuous stream began to arrive, and I rose and went to the edge of the foot to watch them. Immediately beneath my feet was a small ledge, three feet out of the water, about two feet long, and half a foot deep, and this was the only place for a quarter of a mile that was accessible. Penguin after penguin, sometimes a dozen or two at a time, leaped out of the water in the attempt to land on this ledge. The birds met with the most varying success, and the scene was amusing in the extreme. About half of them propelled themselves on to the ledge, and of these about half again overshot the mark, struck the wall at the back of the ledge, allowed a little squeak of surprise to be jerked out of them, and fell back into the sea. Others did not reach the ledge, and these also after severe struggles fell back into the water. A most common calamity was that caused by the rebounding



ADÉLIE PENGUINS ARRIVING AT RIDLEY BEACH.



penguin being rammed by another who had just started the upward dive, and then the outbreak of swearing was truly volcanic. About one in five landed upright and stable on the ledge, and of these nine out of ten when they saw me dived headlong into the brash ice which lined the icefoot immediately to the right and left of the one clear space through which they were jumping. The hardier and braver few walked past me without a tremor, and I saluted them as they went. While I was there, out of five or six hundred that must have leaped at the ledge only thirty or forty were successful and participated in the march past. Meanwhile, as many more had been jumping at the icefoot on either side of me, and of these some charged the ice-face with their beaks, some with their breasts and feet, but only three or four managed the extraordinary feat of jumping out of 2 feet or less of water on to an icefoot 4 or 5 feet high. Of those that fell back into the water a few landed flat with a regular crash, but, on the whole, it was marvellous how they managed by means of their flippers and tails to assume a correct diving attitude before they reached the sea.

It was during such hours of idleness as I have just described that we were best able to appreciate the change of attitude of many of the penguins in regard to ourselves. For some time after their arrival the most that we could hope for was toleration, but towards the close of December many of the unattached bachelors which had formed large colonies on the western edge of the beach made the most determined and compromising overtures of friendship, while some of them even went so far as to make a bid for closer relationship. When the birds arrive at the beach the cocks and hens are separate, and the hens at once select nesting sites. The cocks then wander round, showing off and preening themselves until they meet a mate they think will suit them. They then select a stone of suitable size and

lay it at the feet of their inamorata. If the hen is satisfied she takes the stone and removes it to another part of the nest, and the cock fetches another ; while if she has no use for him she lets him know with both flippers and her beak, and the discomfited bird has to try his fortune elsewhere.

Towards the close of our stay at the cape it was a common thing for one of these unattached birds to sidle up and softly nibble at our trouser legs with his beak. If left alone he would then walk away, and fetch a stone and lay it before us, and if no attention was paid he would bring another. It was as clear a case of a proposal of marriage as could be wished for, and if he had only been allowed I believe he would have built the nest then and there.

On December 11th disaster on a wholesale scale overtook several colonies of the birds. A snowdrift which had formed across a gully in the cliff above their head temporarily stopped the drainage down the gully. A small lake then formed at the back of the drift and saturated it with water, and the whole drift with a good deal of the rock beneath it was precipitated on to the beach. Hundreds of nests were wiped out and the loss of life was terrible, two whole colonies being pretty well annihilated.

At first, so thorough had its work been, I believed that the number of penguins killed was few compared to the injured, but after a minute or two I saw heads, flippers, legs, and bits of skin and flesh, and even the ends of bare bones, sticking out in all directions. Most of these immolated victims were dead, but a few still showed signs of life, and I dug out five, two of which had been completely hidden under a foot of snow, and were only revealed when caves were dug out to rescue their neighbours.

Of these five two seemed unhurt, and showed their pleasure at their release by fastening on to my legs and





THE SCENE OF THE DISASTER.

To face p. 196.







OUR HUT AT CAPE ADARE.



A CAMP AT THE SUMMIT OF CAPE ADARE.

belabouring my shins with their flippers, evidently under the impression that I was responsible for the disaster. Two were not visibly lacerated, but were paralysed in their legs, and the fifth had both legs broken and one flipper dislocated. These latter three I killed at once with my ice-axe, and then started work amongst the injured, fifty or one hundred in number, and slew all I thought had no slightest chance of recovering.

Some of the injuries were frightful. At least a dozen birds had both legs smashed or removed altogether, and these I killed without hesitation, as also three that were completely paralysed. Some of the birds had had the front half of their bodies scraped off altogether, and these at any rate would have been grateful for the *coup de grâce*. When I had killed about twenty of the worst cases—and some took a good deal of catching—I had had enough of the slaughter, and returned to the hut to tell Campbell. He then turned all hands out and they finished the work off and collected such bodies as had any flesh left on them for eating.

Towards the end of December our work was increased by the necessary preparations for the trip which we hoped to make in the latter half of the summer after the *Terra Nova* had picked us up and landed us farther down the coast. As even this did not fill in our time, Campbell decided after Christmas Day to institute a permanent watch at a camp 1,000 feet above sea-level on Cape Adare. A tent and some provisions were, therefore, carried up there, and from then until the ship was sighted two men always remained aloft. It was during our first two days at this camp that Dickason and I took advantage of a fine day to walk some ten miles south along the cape, which proved to be about 4,500 feet above sea-level at its highest point.

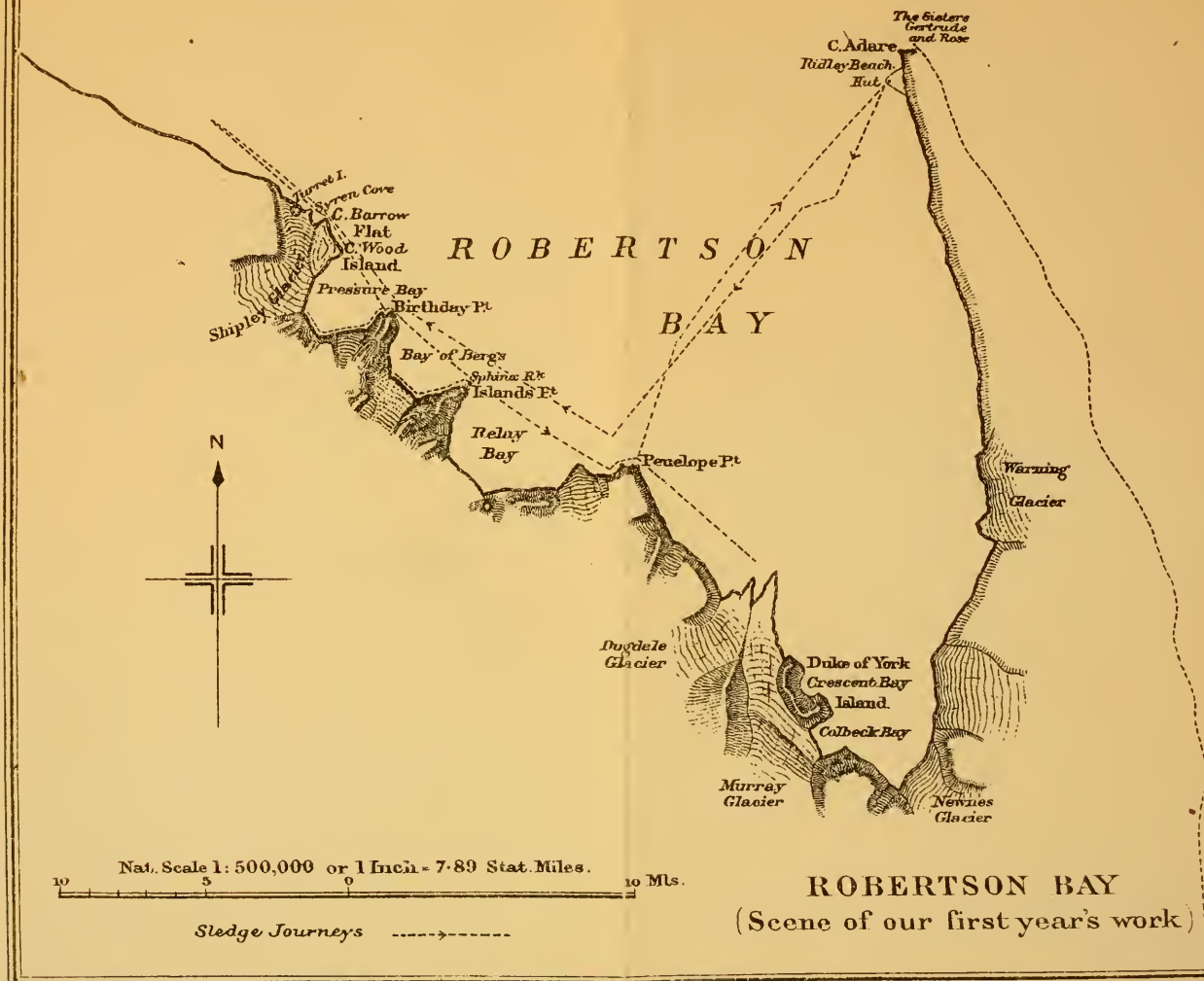
The main object of the walk was to examine the approach to and from Warning Glacier with a view

to the possibility of a sledge trip along the cape should the ship not turn up, and as a result of this trip my opinion is that on such a trip it would be impossible to travel any distance.

On January 3rd the party on the cape sighted the ship, and signalled to us at the base, and soon afterwards she steamed round the cape in full sight of the beach. After some difficulty with the pack they managed to send a boat ashore and Drake and Dennistoun landed with one or two men, but almost immediately afterwards the *Terra Nova* was obliged to put to sea for some hours.

We managed to console our visitors, however, and put them up for the night, and the penguins, which were quite new to them, kept them sufficiently amused until on the next day the ice slackened and the ship put in again. By this time we had all our stores down at the icefoot and a few hours saw the embarkation effected. On the evening of the 4th, therefore, before going below to see our mail, we leaned over the ship's rail and bade a hurried good-bye to the spot which had been a good home to us for ten months, divided once again between relief and regret as we were when ten months before we had lined up on the shore yonder to wave our final good wishes to the *Terra Nova*.







## CHAPTER XIV

### SUMMER SLEDGING

The landing at Evans' Coves—The Campbell Glacier—A reconnaissance up the Boomerang Glacier—Crevasses—Snowblind Camp—Levick's party missing—Fossil wood—The Priestley Glacier—The parties again join up—Levick's adventures in badly crevassed country—Vegetation Island—The return to the Hell's Gate dépôt.

AFTER a pleasant and uneventful trip down the coast, during which we read and digested our mails and the news from the outside world, the *Terra Nova* succeeded in reaching Evans' Coves. These coves are the seaward boundary of a small island on the coast opposite Mt. Nansen. They were discovered by the *Nimrod* on her cruise in search of the Magnetic Pole Party, and were named by Shackleton after her captain.

On the evening of January 8, 1912, the ship anchored alongside the sea ice which still occupied the back of Terra Nova Bay, and the Northern Party, with a team from the *Terra Nova* to help them, pulled their provisions and equipment across the half-mile of ice separating the ship from the shore, and depôtéed all the gear not wanted for the sledge journey amongst the rocks of the moraine we afterwards knew as the Hell's Gate Moraine. We then said good-bye to Pennell, who had come with us in command of the auxiliary party, and a few minutes later the *Terra Nova* set off towards the south, and we were once more left to our own devices.

Campbell had arranged with Pennell that the ship

should call for us as soon after February 18th as possible, and that if she did not appear by March 15th we were to resign ourselves to spend another winter here as best we might. We had therefore brought with us sledging provisions for a six weeks' journey, ready bagged up and stowed on the sledge, while in a depôt on the moraine we stowed two weeks' pemmican for six men, a box containing 56 lb. of sugar, a box with 24 lb. of cocoa, one with 36 lb. of chocolate, and five cases of biscuit, each containing 42 lb. In all, these represented skeleton rations for four weeks, and in the very unlikely event of the ship not reaching Terra Nova Bay before she was obliged to return to New Zealand, we should have to exist on what seals and penguins we could catch before the winter set in.

We had also, very fortunately, landed here the few spare clothes we possessed, and the few pieces of reindeer and dog skin which had been served out to us to enable us to patch our sleeping-bags and our mits. A few bamboos which we intended for depôt marks, a mast and yard for a sledge, some Oxo, and a complete outfit for six weeks' summer sledging completed our equipment. This was a very slender outfit with which to face the possibility of a winter, without any other resources than those a very inhospitable country afforded, but we were at the end of our sledging campaign, or so we thought, and had very few things left, and the likelihood of our being cut off seemed so little that Campbell did not feel that he would be justified in broaching the cases intended for the use of the main party.

In the light of what afterwards happened, it may seem to have been a rash thing to have landed in such a place with an equipment insufficient to meet the needs of the party if they should have to winter. At the time, however, we would all have sworn that if there was one place along the coast which would be accessible in February, this would be the one.



LAYING A DEPÔT.



THE MAN-ROCK. WEATHERED BY FROST AND WIND.





The Drygalski Glacier Tongue to the south of us stretched out for a matter of thirty miles from the coast, and staved off the ice from farther south, forcing it to bank up against its lee side, and then to stream northwards from the point and well away from the land. Captain Evans, in the *Nimrod* a few years earlier, had found a fairly clear sea along here at about the same time as we expected the *Terra Nova*, and in an ordinary year all the ice except the bay ice in the various inlets of the Ross Sea should have been driven north by the blizzards long before February 18th, and the amount of ice remaining should not have been sufficient to restrict the movements of a ship. In the following year, January 1913, we were able to reach our depôt at the same spot with comparative ease, and I still maintain that in normal years Evans' Coves would be easily reached. This happened to be an extraordinarily late season, and the ship was therefore always in difficulties, and so she could not relieve us. Some risk must be taken in Antarctic exploration, however, and though our experience is not one to be lightly repeated, our action has been justified in the event beyond cavil. At the present time of writing, the party of six men who passed through the terrible winter I am just about to describe are all well, and, as far as man can judge, most of them are none the worse for the strain.

On the 9th of January we spent the early morning securely planting and marking our depôt, and left notes for Debenham, who, according to Captain Scott's original plans, was to land here within the next few weeks to do a detailed survey of the Mt. Nansen region. We then left the depôt camp and started away in an attempt to reach Wood Bay, over the western shoulder of Mt. Melbourne. From the very outset of the journey it was obvious that our sledging here was going to be the antithesis of that at Cape Adare, and both much more interesting and much more pleasant. Summer

sledging has few hardships for the experienced man, and if that man shall have gained his experience by several spells of spring sledging in the same season, a summer journey to him will be pure pleasure.

Our spell of inactivity at Cape Adare had commenced to get on our nerves, and we felt now that, whether the road to Wood Bay should prove open or not, we had before us at least six weeks of strenuous activity and interesting work. This proved to be the case, and, fortunately for us, it was with the feeling of work well done behind us that we commenced our winter a few weeks later. Had we been feeling, as at Cape Adare the year before, that we were, despite ourselves, failures, I think it very unlikely that we should have been able to maintain that high level of cheerfulness which, above everything else, was most responsible for carrying us through seven months of squalor and privation.

From the ship we had seen a great glacier streaming over the shoulder of Mt. Melbourne, between it and the mountain chain which bordered the plateau, and Campbell had decided to attempt the passage of this glacier first of all before trying any of the other inlets which might give access to the plateau ice or to the Wood Bay Glacier. This glacier has since been named by Professor David, its discoverer, the Campbell Glacier. After sweeping round Mt. Melbourne, as a series of heavy ice-falls, it bends sharply to the south, and its lower reaches coalesce with several other parallel ice-streams, to form one confluent glacier, at the seaward edge of which are the moraines on which our depôt was placed. It was up the lower reaches of this glacier that we now commenced our march, and the first few days were quite uneventful. Our progress was much hampered in the early days by a heavy snowfall which was accompanied by light southerly wind, and which covered the whole glacier with from 15 inches to 2 feet



ANTARCTIC SCENERY.



BROWNING'S FIRST CREVASSE.



of snow, and even compelled us to take to relaying for a day or so. On the 13th we opened out a glacier on our left-hand side, which was a tributary of the Campbell Glacier, and seemed to offer a possible alternative route to the plateau ; but we decided first to try the Campbell Glacier itself. We therefore only stopped here to do some collecting from the rocks of the moraines and a little rock island at the entrance to the new glacier, and we then proceeded on our march up the main glacier, until on the 15th another snow-storm and blizzard struck us and we were confined to our tents for four days. As a result of reconnaissances from this farther camp, Campbell decided that the ice-falls in front of us were impassable, and that we had better return and try the side glacier to see if that gave a better route to the westward. The evening of the 19th therefore once more found us camped at the mouth of the tributary glacier, and on the following day I took Browning and Abbott and left the camp early in the morning for a day's trip up the glacier to prospect.

The recent snowstorm had blanketed the surface of the glacier with a couple of feet of soft, feathery snow, which successfully hid the ice-falls from our view, but did not make them any less evident once we got amongst the crevasses, and at certain times of the day we were no sooner out of one than into another. The Alpine rope, however, made all safe, and the worst inconvenience of the crevasses proved to be the soft snow, which got inside all our clothes and wet us through before the end of the day. I quote from my diary for an account of the day's work, which is fairly typical of reconnaissance work in a new country in the summer, where the mild weather makes it possible to leave one's sledges for a day at a time.

"Abbott, Browning, and I left the camp at 8.30 this morning and crossed over the new glacier to its northern moraine. We followed this up for a few

hundred yards, hoping to pass the ice-falls while still on it, but we were obliged to leave it because of the heavy going. We then roped up and moved on to the glacier, the surface of which was here covered uniformly with a couple of feet of snow, and we had not walked fifty yards when we struck the hidden ice-falls and I was down three or four crevasses in as many minutes.

“ We wandered about amongst these for ten minutes or a quarter of an hour, but by then had not made any progress upwards ; and although all were hidden, none were securely snowbridged, and one or other of us were constantly in to our necks. We therefore struck back towards the moraine, and reached it a few hundred yards farther up than where we had left it. I certainly never fell far into any of the crevasses, for the men were on the watch all the time, and before my shoulders had disappeared I was generally jerked backwards and dragged along for a yard or two through the snow. In the first case, indeed, which was the first bad crevasse they had seen, I was landed more like a half-drowned perch than anything else, and felt as if the snow which had been driven down my neck must have been coming out of my boots. These crevasses were very numerous, and ranged from 3 feet to 7 feet in breadth. They were all completely hidden, and so it was impossible to avoid them.

“ After this we followed the moraine until it disappeared half a mile up the glacier, and here we stopped to put on our ‘ steigeisen,’ or ice-spikes, for the gradient was increasing rapidly and the surface here was of bare ice, kept clear by a wind blowing down from the glacier. This breeze remained with us from now until we repassed this corner on our return some nine or ten hours later, and did not add to the comfort of the day. After turning this corner, we managed to get good footing by keeping close to the side of the glacier and skirting round the edge of two heavily drifted tributaries





SUMMER SLEDGING COSTUME.



that came in here. A mile or two farther up the glacier, however, the gradient again became much steeper, and crevasses began to appear, and all three of us had a good deal of trouble between the steep ice and the wind.

"It was here that the glacier made another bend, and we were able for a few minutes to see both up and down it before we finally turned the corner and blotted out the lower few miles, and it was this bend and the consequent shape of the glacier that caused us to name it Boomerang Glacier, after the similarly shaped weapon of the Australian aborigines. The view was magnificent, for the glacier was comparatively narrow, only a mile or two wide, and the cliffs were as usual steep and high, broken here and there only by steeply falling tributary ice-streams. The wall at the foot of which we were walking was of massive granite, a deep yellow in colour, and was bordered with steep screes of the same material, while to the south the darker colour of the rocks and their banded appearance suggested the occurrence of gneiss and schist.

"So far since the ice-falls at the foot of the glacier we had met with none but linear crevasses, but ahead of us the ice swelled upwards in long undulations and each dome was covered with wide crevasses, snow-bridged it is true, but with the bridges made visible as slight depressions. It was now that the worst of the day's work commenced, for we were in heavy crusted snowdrift which soon became knee-deep and later, on the mountain-side, thigh-deep.

"I feel sure that with a sledge the worst of the crevasses here could be avoided, and the larger of them are all securely bridged, but there is no doubt of the serious obstacle presented to sledge travelling by the deep crusted snow, and my report to Campbell was that I considered the Boomerang Glacier quite passable for sledges, but that with the present snowy conditions it would take a week to traverse it as far as I could see,

and I could not see from the highest point we reached whether it joined the Melbourne Glacier well above the ice-falls or not.

"During the next mile we crossed several crevasses from 10 to 20 feet wide, but they were so well bridged that we only fell in near the windward edge.

"After a couple of miles of this, with progress aggravatingly slow, I was sure we could never reach the end of the glacier in the day, so we struck off up a steep snow slope leading to a scree of schist and gneiss blocks, and from that to a granite bluff, from the top of which I hoped to be able to see some distance. It was a stiff climb, for as we approached the rocks we reached steep ice under soft snow and slipped back almost as quickly as we climbed up, but by the help of steigeisen and ice-axes we got there at last, and we were amply rewarded by the view.

"From now on until we reached the top of the granite mountain the climbing was easier, though our progress was as slow and toilsome as ever, and we were liable to fall down at any minute between two rounded or angular blocks of granite, to the detriment of ankle, shin, or knee. From the top the view proved to be magnificent in every direction but the north, in which direction we particularly wanted to see. In this direction another and higher hill intervened, and I decided that we had just time to cross the snow-slope between and climb this. We therefore stopped here for five minutes to rest and take some photographs and to wash our mouths out with water from the hollows in the granite boulders, and then made the top of the next hill, which proved to be 3,680 feet above the level of the camp. From here also our view was blocked by another snow-slope, but it was already 5.30 p.m. and time to return home.

"Our progress downhill was quite steady, for every fall was in the right direction, and the only delay was



VOLCANIC CRAGS NEAR MOUNT MELBOURNE.



STRIKING CAMP.









AN ANTARCTIC ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE AT WORK.



THE PRIESTLEY GLACIER.

caused by my getting cramp in my thighs from having continually to lift my feet up high and push the snow-crust away with them before I could make a step forward. As this was some time getting better I was obliged to let Abbott take my place and break trail for a time, but in a few minutes I was able to resume my position. We found that our outward tracks were of little use to us except as a guide, for the wind had filled them with caked snow, which was harder to push out of the way than the crusty drift."

The only change on our way back was the astonishing number of small crevasses we picked up—we must have been into several dozen during the day. We arrived back in camp about 9.30 p.m., having been out thirteen hours, and as our lunch had consisted of a biscuit and a stick of chocolate, we brought a hunger with us which was well worth the day's march. In the meantime Campbell had taken Levick and Dickason with him and had climbed the side of the glacier near the camp, and his report was that there was no possible chance of getting the sledges over the ice-falls at the head of the Campbell Glacier. In consequence of the day's experiences we decided that the best use we could make of our time was to examine the glaciers between here and Mt. Nansen, and we therefore broke camp the next day and, dividing into two parties, returned along the lower reaches of the Campbell Glacier, Levick with two men examining the eastern side, and Campbell, Dickason, and myself the western.

It was now that snow-blindness, one of the few evils that accompany summer sledging, began to make itself felt. Before we left this camp several of us could feel our eyes badly inflamed, and when we had been marching for half an hour my eyes gave out altogether, and I had to march along with one hand on the central trace to guide me. We managed to make one day's march, but while camping that evening Campbell's eyes

gave out, and neither of us was able to take our pemmican or cocoa. Dickason, who had managed to keep one eye open till he had done the cooking, dropped hemisene into our eyes and all over our faces, and then his remaining eye gave out and we had to lie at Snowblind Camp for the next twenty-four hours before either of us was fit to get about at all. The pain of the snow-blindness was excruciating, and of all our experiences in these two years I think that we should least like to repeat this twenty-four hours. On the 24th we arrived at Cape Sastrugi, the southern point of the west wall of the Campbell Glacier, and here we camped and settled down to possess our souls in patience until Levick should arrive with his party. During this wait, however, no time was wasted, for Campbell continued his survey and I my geology.

As Levick had not turned up by the 27th Campbell decided that we could not afford to wait longer for him, and as we could see him in camp from the top of Cape Sastrugi and there was no signal of distress flying, we packed up and started away north towards the two glaciers which were the objective of the next few days' work. From the westernmost of the two, the glacier which Campbell has since named the Priestley Glacier, two parallel moraines stretched for miles, as regular and as even-spaced as the rails of a railway track, and these moraines were our first objective. We accordingly camped that night on the westernmost moraine, and it was on the same evening that Campbell, having turned his shirt for luck, discovered the first traces of the fossil wood which made this moraine the most interesting of all our finds.

The next day we left the moraine of the Priestley Glacier and pulled in across two other moraines consisting of gneisses, schists, and granites, to the inner moraine of the other glacier, which we named Corner Glacier. Here we camped by the side of a stream



CREVASSES ON THE PRIESTLEY GLACIER.



RECONNOITRING IN THE PRAM.









OUR CAMP ON THE CORNER GLACIER MORaine,



A GLACIER STREAM.

which was carrying off the water thawed by the heat from the rock of the moraines, and at this camp we spent two or three interesting days examining the Corner Glacier and its rocks. The moraine here is very closely comparable with the Stranded Moraines in McMurdo Sound and contains numerous large and small lakes, some of the smaller of which were melted when we arrived there. The stream by which we camped and which drained the moraine was only a few feet broad, but was very swift, and had cut a channel which was 2 or 3 feet deep near the camp. Curiously enough it flowed here up the glacier instead of down, and just above the camp it became subterranean, disappearing beneath the ice altogether. A considerable quantity of water must be carried away every summer by this stream, and this must some of it be again converted into ice in the lower reaches of the glacier, though a good deal makes its way to the sea by subglacial channels and pours out on to the sea ice in Terra Nova Bay. Of this we had proof, not only by the occurrence of surface deposits of freshwater ice on the sea ice, but also at a later date we actually observed such a stream flowing out of an opening in the face of the ice-cliff some thirty miles to the north of this place.

It was from this camp that we made a short trip with the sledge across to the end of the bluff which separates the two glaciers, and on this trip we were brought up sharp by a steep thaw channel or barrançã a hundred feet or more deep which had another small stream-channel at its base. While Campbell set up his theodolite on the ice above this gully I left the sledge and descended into the barrançã, obtaining photographs of it and of the stream-channel at its base, and then climbed the bluff and had a look out over the face of the Priestley Glacier, which bends sharply to the west a few miles from its mouth and is lost to view behind its own west wall. This glacier, as can be seen from

the photographs, is seamed with remarkable regular transverse crevasses, and these are evidently caused by a submerged bar across the mouth of the glacier valley, over which the ice has to force its way. This is a glacier which will well repay further investigation, but owing to the absence of the other three men I was not able to have a rope party, and it would have been folly to attempt anything without. The main trouble, indeed, of the country we were now marching over was that crevasses were common even on the level ground, and on more than one occasion when doing geology alone the ground has suddenly given way beneath me, and I have only saved myself from a long drop by spreading out my arms so that they fortunately rested on the sides of the crevasse or on the stable portion of the snow-bridge which spanned it.

On the 31st we recrossed to the Priestley Glacier moraine and camped there, and it was on this day and the following that most of the wood and the impression of a tree-trunk were found. There can be no doubt from what this expedition and the other expeditions have found, that several times at least during past ages the Antarctic has possessed a climate much more genial than that of England at the present day, and this proof is one of the most interesting geological results obtained, while as an antithesis we have equally definite proof that at other times the extension of ice has been infinitely greater than it is to-day.

On the same day Levick and his party arrived. He had misunderstood the orders given to him and had waited for us for some time where we had seen his camp at Cape Canwe. When we moved off and he realized that something must be wrong he broke up his camp and posted after us, but when within a mile of Cape Sastrugi he became involved in a network of crevasses and was compelled to camp amongst them. These crevasses are evidently caused by the differential thrust



ANTARCTIC FOSSIL WOOD.









ROUGH ICE ON THE PRIESTLEY GLACIER.

of the Campbell and Priestley Glaciers, and were very bad indeed and all snow-covered. The bridge of one of them broke under the sledge, and the men could see no bottom but only "great spikes of ice sticking up out of the depths." The feeling of the party when they found they were safely over must have been very similar to that of an elephant whose foot has just dislodged the covering of one of the African natives' big-game traps.

They found considerable difficulty in finding a place sufficiently free from crevasses to enable them to pitch a tent, and when they finally did select one, Levick was obliged to plant a number of ski-sticks round the camp and refuse to allow any of the party outside the limits marked out by these.

The next morning they pulled out beyond the crevasses and arrived on firm ground, and when we saw them and attracted their attention they were making for Corner Glacier.

February 1st and 2nd were spent in another hunt for fossils along the moraine, and then, having as many rocks as we could well carry, we returned by easy stages to Cape Sastrugi, where we camped for the night. We had had fine weather for the last week or two and our faces were very sunburnt, while our beards were assuming quite respectable proportions. During spring sledging and throughout the winter one's beard is purposely kept as short as possible, because otherwise the moisture from one's breath freezes the hair on to the wool of one's helmet, and after the day's march the helmet has literally to be thawed off. Occasions have been known indeed when a member of a party has been so anxious for his hoosh that he has omitted this precaution, and, having pulled the rest of his helmet over his head, he has shut his eyes, given a strong jerk to the helmet, and removed both it and most of his beard, with disastrous results to his face.

The present party had all taken advantage of the pleasant summer weather, and the result had been five respectable beards, though Abbott's was only represented by a few hairs which he said reminded him in numbers of a football match, the two teams being only "eleven a side."

On February 5th Campbell was overtaken by another attack of snow-blindness, and as I was very anxious to examine an island a little off our line of march, we eased up for a day, and he remained in camp to recover, while Dickason and I examined the island.

We had a good day's collecting here and discovered an unusual number of lichens, which flourished on the island as they did nowhere else—so much so, indeed, that we called it Vegetation Island.

The next day, as Campbell was better, we continued our march and pulled in to our depôt camp on the moraine. We found, however, no message from Debenham, and no one had visited the moraine in our absence.

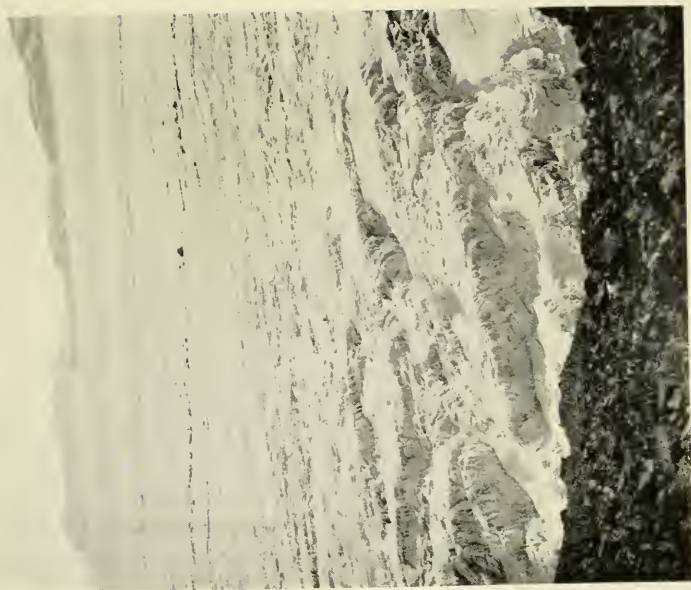








WADING AFTER MIRABILITE.



LOOKING DOWN ON THE PRIESTLEY GLACIER FROM  
CAPE SASTRUGI.



## CHAPTER XV

### WAITING FOR THE RETURN OF THE *TERRA NOVA*

Work on the northern foothills—A seal's burying-ground—A short trip towards the south—The plateau wind commences—Uplifted deposit of marine shells—Confined to our tents by a gale—Damaged tents and repairing under difficulties—One meal a day for a fortnight—The annoyance caused by the wind—Our first seal—I take over charge of the food—More winds—We change our camping-ground and commence to prepare for the winter.

ON February 7th Campbell, Abbott, Dickason, and myself walked over for the first time to examine the island of which Evans' Coves was the seaward boundary, and which we afterwards named Inexpressible Island, and on the same day we shot a seal, butchered it, and brought some of the meat back to camp to eke out our provisions.

The beach at the back of the most northerly of the little coves is formed of huge granite boulders, well rounded by the action of the sea. These rounded rocks occur as far as 50 feet above sea-level, showing plainly that we have here to deal with a raised beach—that is, that the land here has within recent times been raised that amount above the level of the sea. This beach slopes gradually down to sea-level and beyond, so that the inner portion of the cove is very shallow, and the whole length of the inlet is bordered by a broad platform of ice, a hundred or two yards broad at its widest point, and absolutely level. This ice plain is called a "tidal platform," and

is formed between high and low tide marks by the rise and fall of the water during the colder part of the year. When we arrived back at the cove the sun had already commenced to thaw away this tidal platform, and it was very much honeycombed and very rotten. One most noticeable feature of the beach in this first cove was the large quantity of dried seaweed which had been washed up well above ordinary high-water mark, probably by some strong easterly gale which had banked up the waters of the bay. This seaweed was to have a very decided bearing on our comfort during the forthcoming winter.

When I first crossed the hills behind the beach I at once noticed the large number of seals which were basking on the icefoot, and even on the rocks behind it, and these seals remained here until the first big autumn gale a few days later caused them to depart, never to return. It was probably the presence of these seals more than anything else that lulled us into security and prevented us from commencing to replenish our larder for the winter until it was too late to obtain an unlimited supply. Another reason, however, which weighed much with Campbell, was the desire not to kill the animals in any quantity before we were sure that we should not be able to leave. This wish was a very laudable one, but I do not think it will weigh with any of us in future if we see the slightest chance of being held up again. The Weddell seal is always to be looked for in great numbers in similar shallow regions of the coast, and in the long, narrow inlets in the coastal land ice, during this portion of the year, for it is only by becoming strictly littoral animals that they have escaped their inveterate enemies the killer whales. During the winter they live in safety anywhere within the limits of those parts of the sea which are fairly permanently ice-covered, but already in the late spring they commence to collect for breed-



A SUMMER CAMP.



MAKING GOOD USE OF THE LUNCH HALT.





ing purposes at their rookeries, which are all situated within the bays and gulfs where the ice may be relied on until December. As the ice of these bays breaks away during the summer the seals then return to such districts as Evans' Coves, Relief Inlet in the Drygalski ice tongue, and any other places where they feel fairly certain that the killers cannot follow them, and it is then that a party such as ours should lay in their stock of provisions for the winter.

Inexpressible Island, on which we were destined to remain for the next few months, is an island about three miles long by half a mile broad at its widest point. It is bounded on the west by the prolongation of the Campbell and Priestley Glaciers, and on the east by the waters of the Terra Nova Bay. At its western edge it falls steeply to the glacier as a cliff several hundred feet high, but to the east it slopes at first steeply and then gradually down to the sea, fronting it as a series of three coves, such as the one I have already described. The island is of granite and gneiss, and is almost completely bare of snow, the only permanent drift of any large size being the one at the back of the first cove, in which our cave was dug and to which we gave the name of "Seaview," from a reason which will appear later.

Lying amongst the boulders of the raised beach were a number of very old, mummified seal carcasses of all sizes, ranging from those of babies, 3 or 4 feet long, to one old giant, which measured 144 inches and is the largest specimen of a Weddell, or, for that matter, of any other seal, that I have seen. These seal carcasses were also to be a source of congratulation to us in the winter, but of that more anon. It almost seems as if we had come across some old Golgotha of the seals similar to those of elephants which have been reported from Africa and Asia. In almost all of our journeys up the valleys of the coast seal carcasses have

been found, some of them at altitudes which are almost incredible (3,000 feet on the Ferrar Glacier), and there is no doubt that many of these animals stray away from the sea to die, but nowhere have so many carcasses been met with together, and their occurrence is thus worthy of note.

The next day or two were spent in a preliminary survey of Inexpressible Island, but on February 8th Campbell gave me permission to take Abbott and Browning and sledge round the back of the island to see if I could trace the seaward end of the moraines of the Priestley Glacier.

It was on this small trip that we first encountered the steady westerly plateau wind blowing from the Reeves Glacier, which was destined to be the bane of our existence during the winter. As yet it was only a moderate breeze that we had to face, but, nevertheless, as it was blowing straight off the plateau, it was very galling, and we were very glad when we reached our objective and camped on a small drift to leeward of one of the moraines. The wind, however, continued with us all the time, and we were forced to do all our collecting in spite of it. In fact, the only time it stopped was for a quarter of an hour at lunch-time on the second day, and the only effect of its cessation was to force me to leave the tent in order to avoid the fog of ship's tobacco with which the men had filled it.

Whilst examining the moraines closely for fragments of fossil-wood we followed them to their seaward end on the glacier cliff, and a few hundred yards from their termination we crossed a crevasse, which was twenty or thirty yards broad at the place where we struck it, and broadened out farther inland till in places it must have been considerably over one hundred yards. Every here and there it was securely bridged with snow, but for long distances it lay open, a visible bar across our path to the southward.



A SUMMER LUNCH.



A TRIBUTARY GLACIER.



When walking from our camp to the moraines to-day we passed the desiccated body of an Emperor penguin. The poor brute had evidently climbed up on to the glacier from the sea ice farther to the north or south by means of the snowdrifts which always line its face, and had then wandered about until he had died of starvation. A few days later another of these birds was seen near our depôt camp, this time alive, and we killed him and used him for food.

On the 10th, after a third day's pulling across the same cold plateau wind, we arrived back at the depôt camp about 3 p.m., and on the next day Campbell, Dickason, and I pulled over to the northern foothills. These are the backbone of another island, which is the northern boundary of the lower reaches of the Campbell Glacier, and here we spent the next few days collecting and surveying. It was on our way over to this island that we first found large quantities of shells, sponge spicules, and polyzoa embedded in a depression on the surface of the glacier, an occurrence for which we have as yet no satisfactory explanation. It is certain that where these beasts live there must have been from fifty to a hundred fathoms of water, and how to account for their occurrence on the surface of a glacier 20 feet above sea-level is a puzzle indeed. At about noon on the 12th Levick and his party joined us at our camp near a frozen glacier lake with very interesting news.

They had found a small penguin rookery at the farther end of the first cove, and there they saw what no one has previously recorded. Levick says that the parents were enticing their young into the surf which was breaking on the beach and teaching them to swim.

A heavy fall of snow which fell just now very much reduced our chances of doing good geology, and was also a great nuisance from another point of view. The northern foothills, like Inexpressible Island, are

littered with huge boulders of granite, gneiss, and schist, and a light wind covered the boulders with snow and also filled the spaces between them. Walking thus became not only arduous but almost dangerous, and it was quite a common thing for a member of the party to slip between two of these boulders until his thigh was hidden to the socket, and slight strains and twists of knee and ankle were common.

On the 14th the weather cleared sufficiently for Levick to obtain his last batch of photographs, and the same day he returned to the moraine so that he might be within walking distance of the penguin rookery. We ourselves remained a day or two longer, but we also returned on the 17th in accordance with our prearranged plan, and settled down at the depôt to wait for the ship. On the short journey across the glacier we were again galled by a westerly wind, and the temperature at these times had already a hint of spring. Unfortunately, our last sledge thermometer was broken at Cape Adare, and so we had no means of telling accurately what the temperature was, but several frost-bites testified to the keenness of the wind. We arrived to find that the other party had very rashly camped on the actual surface of the lake, and that this had commenced to thaw under their camp, so that there were pools of water under their bags. As the wind was sufficient to make moving camp unpleasant, they decided to stop where they were and pave their tent with flattish rocks, and accordingly they put in the next few hours at this work.

The morning of the 18th saw the wind increased to gale force, but in the afternoon it eased for a few hours, and a working party rearranged the sledges from the depôt and repacked them ready for the expected arrival of the ship. On the following day, however, we awoke to find the gale again blowing, and from this time the place began to deserve the name we







INEXPRESSIBLE ISLAND : THE START FOR A SLEDGE JOURNEY.



THE *TERRA NOVA* HELD UP IN THE PACK.

To face p. 219.

afterwards gave to it. The wind remained almost constant for days, and we were confined to our tents for most of the time. Ever since we had returned to the base there had been no pack within sight from the depôt camp, and this state of affairs continued throughout the rest of the month. The waters of the bay were lashed to fury by the wind, and all we could see to seaward was one constant procession of white-caps sweeping across the bay. This was the more peculiar as we were afterwards told by the officers of the *Terra Nova*, who made three attempts to reach us within the next fortnight, that on each occasion they were stopped by heavy pack, so that the nearest point they were able to reach was twenty-seven miles away. The absence of the pack inshore was a great trial to us in these days, for it removed the only tangible natural cause which we might have expected would prevent our being relieved. Our minds, therefore, were always liable to search for catastrophic causes to account for the absence of the ship, such as a wreck, or the loss of the Southern Party, and this did not by any means tend to promote optimism. As time went on our ideas finally crystallized into the form we willed them to take, and we came to think and speak as if the *Terra Nova* had waited till the last moment for the Southern Party and had then been blown north by one of the gales whose fury we experienced; but it was some time before we arrived at this satisfactory state of mind, and in these early days the cause of the failure to relieve us took on much the same hue as the spirits of the party. If we were despondent and the outlook seemed black, we called in a catastrophe to explain the position, while if, as usual, we felt fairly optimistic about our own chances we inclined to more cheerful theories.

On the 21st this first gale reached its culmination, and both tents suffered considerable damage. Our own split at the top, and despite the wind and drift

we were obliged to get out of the tent and secure the canvas tightly round the cap of the poles with a piece of lamp-wick which had formerly been a finneskoe lashing. Levick's tent, on the other hand, held at the cap, but split across the door, and Abbott was compelled to take palm and needle and sew the rent up roughly, a very cold job indeed. During the night which followed one of the bamboos of our tent came out of its socket in the cap and much reduced the stability of the whole frame, while in both tents numerous holes were being chafed by the flapping of the canvas against the rocks with which we had weighted the skirting.

Our sledging provisions should have come to an end on the 22nd, but, fortunately, we had been economical and had saved a little, so that throughout this gale and the next by dint of having only one meal a day we were able to last out without broaching the depôt provisions.

The wind which had just passed was only an ordinary southerly and very typical, but it was rendered peculiarly abominable by its long duration and the time at which it had come. Our feelings towards it beggared description, and our disgust was much heightened by the fact that we were all longing for news of the ship, while the weather was quite as cold as spring sledging. The effect on our spirits of this gale and the ones which succeeded it is well seen from the following extract from my diary of February 22nd :—

“The worst of a wind is that you can do nothing to it. If you are being annoyed by a man or an animal bigger than yourself, you can at least get on the other side of a fence and throw stones at him or it, but here we are hung up by an infernally cold wind and able to do nothing against it whatever, while it is gradually tearing our tent in pieces. We are all getting less physically fit and feeling the cold more,

and this is showing itself by the continual presence of cold feet, and by constant attacks of cramp in different parts of the body. It is to be hoped that the ship is all serene and not blown out north by the wind. Before the gale commenced Levick and Abbott reported that they saw a trail of smoke off the ice tongue, and we therefore think that she may be sheltering in Relief Inlet, but at times like this all of us have strong imaginations. We are all suffering very much, and myself in particular, from an almost intolerable itching of the feet when circulation is restored after they have been very cold. The barometer isn't much use to us nowadays. As far as I can make out if it goes up it means the gale is going to be stronger, if it goes down the wind is going to increase. When the barometer remains steady the gale remains steady too. Cheerful, isn't it?"

On the 23rd the wind eased up for a few hours till only a moderate breeze was blowing, and we took the opportunity to have a walk and to look round for seals. These latter were not common, but the men managed to kill and butcher a young crab-eater, which was a welcome addition to our available food. On this day Campbell asked me to take over complete charge of the food in the event of our having to winter here if the ship did not arrive, and from that time on I found myself responsible for all rations served out. This work was the cause of endless trouble during the winter which followed, but in the long run it proved to be much more of a blessing than a curse, for it gave me something to think about every day and successfully prevented me from worrying about anything else very much. With untried companions it would have been an impossible task to attempt to satisfy everybody that the food was being divided to the best of my ability, but my companions were not untried, and the only result of the inevitable reduction of the rations

was the unusual consideration which was shown in all cases to the commissariat officer. When the last date named for the possible arrival of the ship was behind us, no single word of criticism passed the lips of any member of the party, and it was never their fault that the work was sometimes unpleasant in the extreme.

With the cessation of the wind on the 23rd the temperature rose, and we then at once felt the effects of the continued camp in one spot. The hollows which had gradually been formed beneath our sleeping-bags speedily filled with water, and Dickason and I were obliged to have recourse to stones to keep our hips and shoulders out of the wet. Campbell had already adapted his ski and ski-sticks to the purpose of a mattress, and this device proved so successful that most of us finally adopted it. I can recommend it cordially to any other party who, for their sins, may find themselves in an analogous position.

On the 24th the wind once more rose, and, though it died away from time to time, it was plain that another gale was working up. This time the wind was accompanied by heavy snow, and it was impossible to see one tent from another, while on the 27th the snow was so thick that we could not see our own tent from the sledge, which was only three yards away. Inside the tent we were supremely uncomfortable, for the drifts restricted our movements abominably, and a thin rain of snow drove through all the holes made by the last wind, and even through the pores of the weather-worn canvas, so that everything within was wet through. We could do nothing but lie still and think and try to sleep, though none of us found ourselves able to do the latter for long at a time. The wind continued throughout the night of the 27th and the whole of the 28th, but the latter hours were clear of snow, so that the huge drifts which had collected round the tent and sledge disappeared almost completely and the





A GLACIER TABLE.



THE HELL'S GATE MORAINE.



strained tent flapped wildly, raising a very pandemonium about our devoted heads.

On the 29th the wind eased at last, and we sledged across to the northern shore of Inexpressible Island, where we pitched our tent on an old gravelly lake bottom, and secured the skirting with large rocks in the absence of snow. Levick and his party were left in camp at the Hell's Gate depôt, as from there they had a clear view in the direction from which the ship might be expected. During the last gale Campbell and I had discussed the situation thoroughly, and he had decided that it would now be wisest to act as if we should certainly be detained and at once to set about the collection of food and the preparation of winter quarters. In a reconnaissance on this day we had seen one or two drifts which might conceivably shelter the whole party, and we determined in future that whether the weather was calm or not we should be divided into two parties, one to dig out a cave in one of these snow-drifts, the other party to kill, clean, and butcher any seals and penguins that could be found, and to transfer our depôt of food and some of our gear over to the shores of the island. In accordance with this plan every clear day in future saw some progress made in one or other of these objects.

## CHAPTER XVI

### PREPARATIONS FOR THE WINTER

Butchering seals and penguins—The biscuit ration is reduced—  
Making camp in a gale—We commence to dig out a cave—  
Blubber adopted as a ration—The first reading-lamp—Celebration  
of birthdays—Serving out the biscuit—Under-baked biscuits and  
their result—An Antarctic lottery—Continuous winds—We move  
into the cave—Black Sunday—Collapse of Levick's tent—An  
uncomfortable night.

IT was fortunate that we had taken advantage of the short spell of fine weather to move our camp, for the calm spell lasted only a few hours and then a stiff westerly breeze again sprang up. It was now clear, however, that we should have to proceed with our preparations in spite of this plateau wind, so on March 1st we sallied forth and spent a hard day killing and cleaning seals and penguins and storing their bodies in convenient depôts. Our hunting on this day was comparatively successful, for we secured two seals and eighteen penguins, but it was already evident that it was going to be quite difficult to obtain enough meat for the winter. The work was supremely unpleasant in the galling wind, and our wind-clothes were already so torn that they were not very much use to us as a protection ; frost-bites were common, and we were so weak from the fortnight's confinement to our tents on one meal a day that a walk of a mile or so tired us all.

I had not, so far, arranged any definite ration of food for the winter, but directly the sledging food gave

out we decided not to broach our other stores at all until we were settled in our winter home. The biscuit ration was accordingly reduced from the eight, which was our full sledging ration, to one a day, and all other luxuries, such as sugar, chocolate, raisins, etc., were cut out altogether. Our meals during this time of transition, in fact, consisted solely of a mixture of half-rations of meat and pemmican, with weak cocoa to follow, and one biscuit per day, and we were not destined to eat our fill again until midwinter night.

On the third the gale was back with us in all its full fury, and our weakened tents were not qualified to stand the new strain, as will be seen from my diary.

“A gale of hurricane force had been blowing all night and till noon this morning. We got no sleep and were out several times piling stones on our tent to keep it from being blown over our heads. At last it was ripped so badly that it was evident it would not last to-morrow, or even to-day if it continued blowing. About noon we started to shift camp on to the drift where we left the sledge, and we have been between two and three hours setting it up there. It is up now and with plenty of snow on the skirting, but Heaven alone knows how long it will stop up, and the wind is blowing as hard as ever. Just going to cook breakfast. A nice operation to-day's has been for a Sunday, and if it is just a preparation for the winter and we are left down here we shall be as weak as rats. We have spent twelve days out of the last fifteen in our bags, and we all feel as if we had been running a long race.”

When the wind eased to half a gale I managed to make my way across the glacier between the island and the moraines and served out a bag of pemmican to Levick's party, bringing another back to our own tent. This was the last of the pemmican we could spare, for we had early determined to keep at least half of our remaining food to act as sledging rations in the attempt

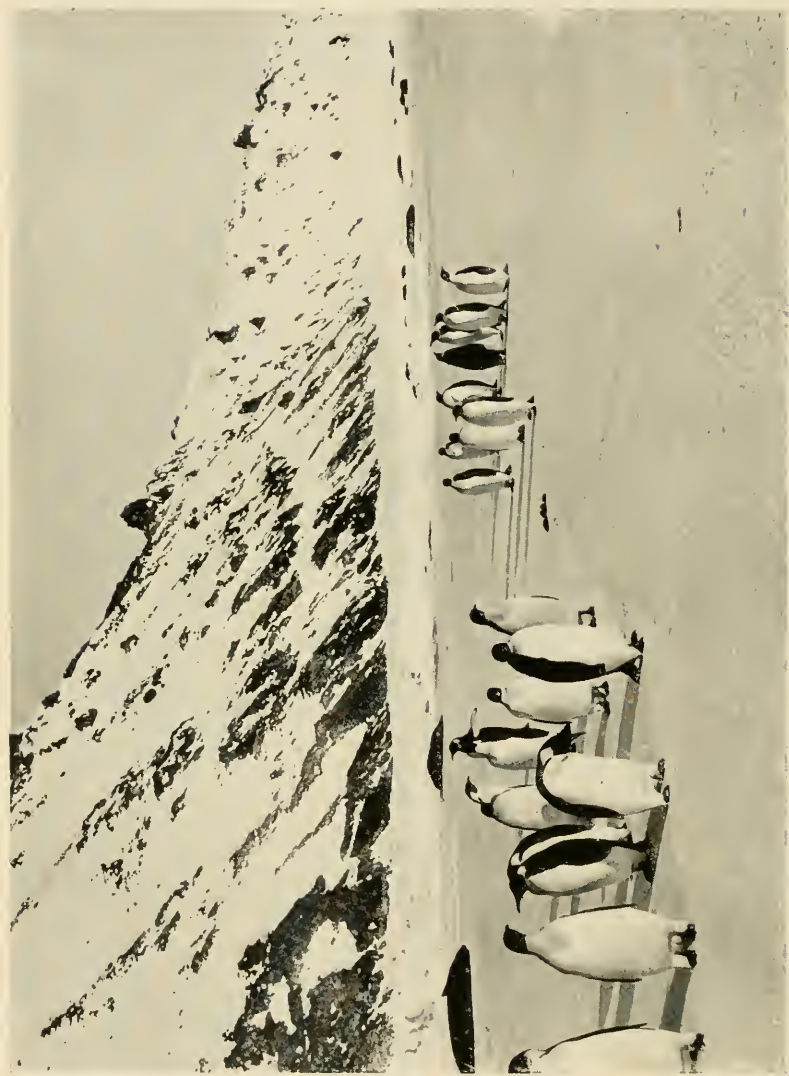
we should have to make to sledge down 200 miles of coast and reach Cape Evans in the spring. I found the other three very cheerful considering everything, but the *Terra Nova* was beginning to get into their dreams. The wind and sea had removed the skin and blubber of one seal that had been butchered, and this was a serious loss. Two seals had been killed on a bit of sea ice which remained in a little cove in the face of the glacier, and the gale had risen before they had had time to save the second skin.

On the 5th, although the gale continued, it was free from snow, and we were just able to make our way over the ridge at the back of our camp and into the next valley where the bigger of the two snowdrifts was situated, and three of us commenced to dig into this drift. This work was continued during most of the days which followed, and as we made the cave larger and larger the wind worried us less and less except on our journeys to and from the drift. We first sank a trench 3 feet by 4 feet to a depth of 6 feet, and then from the side of this we picked out a large cave towards the thickest part of the drift. The fragments of ice meanwhile were thrown down the slope of the drift and the wind helped to carry them well clear of the shaft. At first when we were working in the wind we took turn and turn about with pick and shovel, but as the hole grew larger and we could work more in comfort we fell into a natural routine, Campbell or Dickason and I working constantly at the cave and Levick and his two men increasing our supply of meat whenever they saw a seal. Our working strength was much impaired by the constant necessity of keeping one man at home to remain in charge of the tents, but the gale raged all the time these preparations were going on and the tents were so weakened and frayed that we dared not leave them alone for a minute.

Now that work was again in full swing our hunger







EMPEROR PENGUINS.

became more and more exacting, and towards the end of the long interval between breakfast and dinner (we had long since cut out lunch) the craving for food was physically painful. We were able to eat a fair quantity of meat because we did not yet realize how scarce even that was to be, but the one biscuit a day left us with a continual longing for carbohydrates, a desire which nagged us persistently and finally overcame our dislike for blubber. This week, therefore, for the first time, saw blubber adopted as part of our regular ration, never to be dropped until November. I shall not soon forget my first taste of blubber and the relief I felt when it was plain that the new food was not going to be distasteful. As I mentioned in the last chapter, we had, in a lull during the first blizzard, killed and butchered a young crab-eater seal. A few days afterwards we tried some thin pieces of his fat raw and found them quite palatable, while Abbott and Dickason even declared that the fat tasted strongly of melon. That opinion I was never able to endorse with sincerity, though later on in the winter I held for some weeks the proud position of "Blubber King," only to be displaced later by Abbott, who revelled in sticks several inches long and a square inch in section. It was hard at first to conquer the physical distaste when one bit on a juicy piece of the fat and the oil spirted in all directions into one's mouth, but after the first few days I think that none of us save Campbell found the blubber of either seals or penguins distasteful, with the exception of that of one ill-nourished seal which we killed when it was in bad condition.

One of the duties of the watchman in the tent from now on, therefore, was to prepare for himself and his tent-mates a feed of succulent strips of fried blubber, ready to be eaten hot as soon as the working party returned from drift or shore. This blubber was fried over the flames in the frying-pan belonging to a small Norwegian cooker of Campbell's, and the oil was

tipped into a tin and was used in our first attempts to make a satisfactory reading-lamp. A sledging party only carries with it a limited supply of matches, and on these the cook, of course, has first claim, while a certain number per day is allowed to each smoker. We had always been economical of matches as of everything else, and we now found ourselves with ample to last us for the winter if they were used carefully. The first step in economy was naturally to shut down on those used by the smokers, and for some days they were compelled to start their pipes before the primus was put out, which did not improve their enjoyment of the smoke. Accordingly, Dickason in our tent and Browning in the other, turned their hands to the improvisation of a blubber-lamp, and needless to say they had enough advice and to spare from the rest of us. On March 8th Campbell and I arrived home after a very hard battle against the wind and were regaled as usual by Dickason with several savoury bits of seal blubber as a preparation for our very frugal dinner, but besides this to-day he produced the first blubber-lamp. It was a distinct success, and we spent a very cheerful evening in consequence. I wrote in my diary that evening:—

“Both tents have now a blubber-lamp made by suspending a few strands of lamp-wick from a safety-pin which is stretched as a bridge across the mouth of a small Oxo tin full of melted oil. The light is splendid, better than I should have thought possible, and the lamps will be very economical. The only drawback at present is the expenditure of paraffin oil necessary to melt the blubber. We must make the lamps melt their own oil when we get into our winter home. The lamps also give out a surprising amount of heat and very little smoke. We ate the pieces of blubber after the oil had been expelled from them and found them excellent. They tasted to me equal to any ordinary variety of fat one gets at home.”

Thus was overcome a difficulty which had loomed large before us in all our discussions about ways and means of passing the winter. It was evident that three things were absolutely necessary, and perhaps only three. We must have light, shelter, and hot food. The first difficulty was past now, for with the exception of the substitution of a bridge of pierced tin for the safety-pin and of a piece of string or unravelled rope for the lamp-wick, these lamps served us faithfully, if somewhat dimly, the whole of the winter, and we knew that darkness could be dispelled at will. Until now the most cheerful members of the party had had more than a few moments when our outlook seemed so black that despair was very near. This small triumph, however, insignificant as it was, was a pointer to all of us, and from this day we may date the rise of a cheerfulness that proved to be invincible and which finally carried us down to Cape Evans amongst plenty once more.

The 10th of March was Abbott's birthday, and, according to an invariable rule, this was celebrated as a festival, and the strings of the food-bag were released sufficiently to allow of the serving out of an extra biscuit. This celebration of all special occasions proved to be a godsend indeed to us during the next seven months, and as I had taken the precaution to allow for six birthdays and as many other festive occasions, I was always able to advance some little trifle, a biscuit apiece, a stick of chocolate, or half a dozen raisins, to mark the occasion.

It was little enough, but never, I am sure, have any of us appreciated a birthday treat as we did these little additions to our normal fare. Such gala days were looked forward to for a week or more and remembered for as long ; they seemed to break the monotony of the winter, and one of our biscuits could with care be made to last for an hour and would give more pleasure than a City dinner—I say this, too, with the memory of the

dinners given to us on our return fresh in my mind, and without a feeling of ingratitude to the donors.

During the long months of the winter, beginning with the 1st of March, when our ration first dropped to one biscuit a day, there was one ceremony which marked the flight of time as did no other. When we awoke in the morning in March, April, May, or June, our first thought was: "Is it a two-biscuit or a one-biscuit morning?" Later, in July or September, when there were no two-biscuit mornings, we said to ourselves: "In half an hour I shall have my biscuit." Only in the worst month of all—August—our mornings were clouded by the thought that there was no biscuit to come to us until the month was past.

As soon as the cook declared the hoosh to be within five minutes of cooked, I would get out of my bag and carefully open the biscuit-box. Some of these boxes had been carried on our sledges for a matter of six weeks over rough country, and all of them had been roughly handled when taken on shore or on board the ship, and most of the biscuits were therefore smashed. If it were near the beginning of the month I would be able to put out six biscuits, or twelve as the case might be, on the sugar-box we used as a serving-out table, but if there were no whole ones left one was saved to use as a pattern and pieces sufficient to cover it were mapped together like a child's puzzle. Meanwhile the other five looked on with hungry eyes and speculated as to whether the biscuits were overbaked or underbaked, a serious matter nowadays. When we were sledging an overbaked biscuit was a luxury we all looked forward to, for they were crisp and well-flavoured and, above all, easy to break. Now, however, all that was changed, and if the beginning of the month revealed a box of biscuits which were even a little burnt, loud and deep were the curses called down on the baker's head. Do not let him blame us either



until he has starved for a few months on half-rations of tasteless meat and too tasty blubber and one miserable biscuit per diem. If the biscuits were underdone, however, it meant at least thirty bright spots in the coming month. Every morning we might look forward to half an hour's enjoyment, for the only thing that could prevent us hurrying unduly over this daily treat was the inability to bite the biscuit easily. I have nibbled and nibbled round the edge of such a biscuit until it had all disappeared without my having ever had a fragment in my mouth of such a size that I could feel it crunch under my teeth. Then I felt as if I had got the maximum enjoyment out of the meal, and I could lie back in my bag and feel satisfied with myself for an hour or so, after which a gnawing pain beneath my belt would begin to remind me that the meal after all was insufficient, and I had to wait some hours before I should get another.

To return to the distribution. After the six little heaps—and they were always painfully small—were laid in order on the box, then came the question of a fair division. Even if the biscuits were whole they might differ slightly in size. If a division were made by the server according to his own ideas, although he might be scrupulously fair, not only he himself but all the others would feel continually that the portions were not, in fact could not be, equal. Then a certain amount of energy would be wasted suppressing such thoughts, and if ever a party needed to be free of rancour it was surely ours at this time. To overcome this difficulty we resorted to the common method of gambling, which is already a recognized feature of sledge trips. After preparing the heaps and closing up the tin I would point to one man and say: "Turn your back, So-and-so." He would then turn round and shut his eyes and I would point to one heap and say: "Whose is this?" He would reply, and the pile would be passed to its

owner, and so we went through the six names. In connection with this method of division there was one curious and rather amusing manifestation of the effect of prolonged naval discipline on the sailor's mind, and I know that my comrades would not object to my mentioning it here.

In the early days of the winter, whenever I called on either Abbott, Browning, or Dickason to turn their backs, I could have divided the biscuits up as I liked. When they gave the names they invariably kept to the order of seniority: Lieutenant Campbell, Dr. Levick, myself, and then the three men in order. It was not until I pointed out that the order placed an unfair amount of responsibility on my shoulders that they made a conscious effort, and I would hear at first even then: "Lieutenant Campbell—I mean Browning—sir!" After the biscuits were served out every one used his own discretion how and when he ate them, and many were the discussions during the winter as to the best way of making the most of them.

By March 17th our cave was sufficiently advanced for Campbell, Dickason, and myself to move in, and we therefore decided to cart over our stuff to the drift and settle down there. We should then be able to camp in the cave for the night and have our meals there, and if the weather were very bad we should still be able to work under shelter. We therefore struck camp in the morning and spent the whole day bringing our gear over, and I don't think any of us would care to repeat the day, which I will describe as it is recorded in my diary.

"7 *p.m.*—Strong south-west breeze all day, freshening to a full gale at night. We have had an awful day, but have managed to shift enough gear into the cave to live there temporarily. Our tempers have never been so tried during the whole of our life together, but they have stood the strain pretty successfully. After





EVANS' COVES.



"PAVED WITH HUGE BOULDERS."

breakfast Abbott and Browning came over and started to carry the sugar and chocolate boxes to the cave. Then I went over to their tent and took them three or four days' biscuit ration and their chocolate and brought back a tin of oil and my carrier. By the time I got back the others had struck camp and piled everything on the sledge, and we sledged everything along the edge of the glacier until we were as near the drift as possible. The wind, which had lulled a little, was again beginning to freshen when I started, a few minutes before the others, with my pack for the cave, and it then rose rapidly to gale strength, with heavy drift in the gusts. My pack, a sleeping-bag, rucksack, and bag of notebooks, etc., was very unwieldy, and was rendered more so within the first hundred yards, when the sleeping-bag unshipped its moorings and came loose. I then slung the latter round me to windward, and it was handicapped in this manner that I finished the trip.

"May I never have such another three trips as were those to-day. Every time the wind lulled a little I fell over to windward and at every gust I was pitched to leeward, while a dozen times or more I was taken off my feet and dashed against the ground or against unfriendly boulders. The other two had equally bad times. Dickason hurt his knee and ankle and lost his sheath-knife and Campbell lost a compass and some revolver cartridges in the two trips they made. Altogether it was lucky we got across at all. Abbott and Browning were compelled to depôt the boxes, but they returned for our primus and cooker, and by the time they had completed this first trip it was so late that we had only time to send them for some sea water and blubber before they had to return to their own tent. We got most of our necessary articles over, however, and have enjoyed a thoroughly good though insufficient hoosh in our new home, the first of many equally good,

I hope and expect, for I don't think there is the slightest chance of the ship coming. We then spread a seal-skin on the floor, sat on it until we had thawed out the humps, spread two floorcloths over it, and turned in, first converting the tent into a door to keep out most of the drift.

"It is good to lie in one's bag and not to hear the flapping of the tent, but until we get the insulation finished the cave is going to be very cold. I have eaten a pint of blubber to-night in great thick slices and feel much the better for it, but I have also anticipated to-morrow's biscuit allowance, for we had to bring it over loose and this was too much for my fortitude. We sang some hymns to-night, but could not remember many."

The gale raged without cessation during the 18th, but we were able to work steadily at the cave, which by this time had reached its final dimensions, 12 feet by 9 feet, but still wanted a foot or two in height.

It was fortunate that we were able to devote our whole attention to this work on this and the following day, for on the evening of the 19th, Levick, Abbott, and Browning arrived at the cave thoroughly exhausted and without any of their equipment. Early in the morning the gale had reached its climax, and in one of the gusts the three bamboos on the weather side of the tent had been snapped as if they had been reeds. The tent then collapsed over the heads of the party, and the jagged ends of the poles made short work of the canvas.

Levick's account of the accident and of their subsequent adventures is of sufficient interest to be reproduced verbatim :—

"The wind had been blowing very hard all night and at 8 a.m. it had increased to hurricane force. The tent door, which had been flapping violently, had a large rent in it, and Abbott was mending this when suddenly, with a startling crash, the bamboo tent-poles



gave way, and in a minute the whole tent was down on us, the tremendous weight of wind upon it pinning us down so that we could hardly move.

“The situation was a most uncomfortable one. With great difficulty Abbott wormed his way back to his bag and managed to get into it; and for a time I thought the only thing for us to do was to lie quietly as we were, in the hope that the wind would moderate.

“The snow and ice blocks which we had piled round the skirting outside were by this time frozen into a solid mass, so that there was little fear of the wind getting under the tent and lifting it away. We had had nothing to eat for twelve hours and were becoming very hungry. As there was a large lump of raw seal-meat handy, we gnawed at this, but it was so cold that it froze to our lips, and so hard that after we had eaten off the angles we could no longer make any impression upon it. We had all put on our windproof clothing, in case of accident.

“About midday, as the wind showed no sign of moderating, I thought that something really must be done, so Abbott and I managed to find where the door was, and crawled through it, leaving Browning inside to sit on the bags. On getting outside, we found the force of the wind so great that it was impossible to stand up for a moment. I wanted to find some place sheltered enough to allow of our putting up the spare tent, so we crawled some distance, on all fours, to the lee of one of the moraine heaps. Here, however, things were just as bad; the wind swept over and round the mound, and wherever we tried there was no sort of shelter. After this we crawled back and underneath the tent again, having had just about enough of the wind. We all three got into our bags again and lay there until about 4 p.m. Fortunately, I had saved two sticks of chocolate and a biscuit, which we divided amongst us, and this was all we had to eat all day.

"The sun was now going down, and as the wind showed no signs of abatement, it became evident that we could not see the night through where we were, and that we must make an effort to reach the other party over at the igloo. We all three crawled out, and piled ice and moraine blocks all over the tent and its contents, being most careful that there was no chance of our precious sleeping-bags being lost. To take them with us against that wind would have been impossible.

"Having done this, we started on our journey. This lay, first of all, across half a mile of clear blue ice, swept by the unbroken wind, which met us almost straight in the face. We could never stand up, so had to scramble the whole distance on "all fours," lying flat on our bellies in the gusts. By the time we had reached the other side we had had enough. Our faces had been rather badly bitten, and I have a very strong recollection of the men's countenances, which were a leaden blue, streaked with white patches of frostbite. Once across, however, we reached the shelter of some large boulders on the shore of the island, and waited here long enough to thaw out our noses, ears, and cheeks. A scramble of another six hundred yards brought us to the half-finished igloo, into which we found that the rest of the party had barricaded themselves, and, after a little shouting, they came and let us in, giving us a warm welcome, and about the most welcome hot meal that I think any of us had ever eaten."

After the arrival of the evicted party we made hoosh, and as we warmed up from the meal we cheered up and had one of the most successful sing-songs we had ever had, forgetting all our troubles for an hour or two. It is a pleasing picture to look back upon now, and if I close my eyes I can see again the little cave cut out in snow and ice with

the tent flapping in the doorway, barely secured by ice-axe and shovel arranged crosswise against the side of the shaft. (At the time there seemed no other way to secure the door, but in September, when we were mending the holes, we could have wished we had found some more harmless method.) The cave is lighted up with three or four small blubber-lamps, which give a soft, yellow light. At one end lie Campbell, Dickason, and myself in our sleeping-bags resting after the day's work, and opposite us on a raised dais formed by a portion of the floor not yet levelled, Levick, Browning, and Abbott sit discussing their seal hoosh, while the primus hums cheerily under the cooker containing the coloured water which served with us instead of cocoa. As the diners warm up jests begin to fly between the rival tents and the interchange is brisk, though we have the upper hand to-day, having an inexhaustible subject in the recent disaster to their tent and their forced abandonment of their household gods. Suddenly some one starts a song with a chorus, and the noise from the primus is dwarfed immediately. One by one we go through our favourites, and the concert lasts for a couple of hours. By this time the lamps are getting low, and gradually the cold begins to overcome the effects of the hoosh and the cocoa. One after another the singers begin to shiver, and all thoughts of song disappear as we realize what we are in for. A night with one one-man-bag between two men ! There is a whole world of discomfort in the very thought, and no one feels inclined to jest about that for the moment. Those jests will come all right to-morrow when the night is safely past, but this evening it is anything but a cheery subject of contemplation. There is no help for it, however, and each of us prepares to take another man in so far as he can.

Campbell and Levick double up, then Abbott and Dickason, and lastly Browning and myself. Now those

of us who are small have reason to thank God that it is so, for on our size our comfort is dependent. I am slim and Browning is slimmer, so after half an hour's gradual work he manages to get everything but his shoulders into the bag, while we endeavour to do our best to keep these warm by pushing hard against the occupants of the next bag. None of us are destined to get much sleep to-night. From Campbell and Levick come muffled sounds every few minutes which can mean only that they are in trouble, and there are signs in plenty to show that Abbott and Dickason are not exempt from the general discomfort. Indeed, it is from them that the biggest explosion of the night comes, for Abbott, as usual, manages to go to sleep and Dickason, who is inside, is all but suffocated before he manages to wake his companion and make him release his head. From time to time throughout the night the twisting and turning go on, and never before or afterwards were we so glad to see the shaft of light through the door which at that time of the year announced the day. It was still blowing a gale outside, but our experiences had been enough, and after breakfast the other bags were fetched in spite of all the wind could do.

In this way was the first night under the new régime passed. After it was over it became, like everything else, a theme for jesting ; but a nightmare in which I am slowly being suffocated with eiderdown pillows is a legacy which it has left with me, and I was certainly more comfortable than most of the party.

## CHAPTER XVII

### SETTLING DOWN TO A WINTER ROUTINE

Seal-meat and blubber in the hooshes—Our slender ration of luxuries—The small ration a blessing well disguised—The duties of the cook—Fish out of a seal—Description of the door of the cave—The insulation—Blubber-stoves—The making of the passage—Our weatherproof home—The last day of each month becomes a fête—Our tobacco runs short—Wood-shavings, tea, senna-graes, and hair socks as substitutes—Effect of meat diet on our condition—Dreams of food and relief—Description of the interior of the cave—Seal's blood to thicken the hooshes.

THE 19th of March saw us settled down in our new home, and we now turned all our attention to improving our position in every possible way. Since the middle of February all luxuries had been cut off altogether, but now I opened up our boxes of chocolate and sugar and served some out, and the ration now adopted remained practically without change until the end of the winter.

The continual wind had also opened our eyes to the danger we were in of not securing enough seal-meat to last us through until the spring. We knew pretty well by now how long a seal would last us, and I calculated that we should require at least fifteen to carry us through the winter on half-rations. As yet our catch numbered only half a dozen, and of these two were unbutchered, and therefore only of use in an emergency. Seals like wind no more than do human beings, and they were not likely to appear in any number so long



as the plateau wind held sway. It was quite clear that we must go hungry for the present, and, accordingly, the seal-meat ration was reduced by one-half, and the hooshes, therefore, became correspondingly thinner and less satisfying. Blubber had already become a regular ingredient in the hooshes, and was cut up into cubical dice about half an inch in section. We found that in this way we had less oil in the gravy than from pieces of any other shape, and the plan was adhered to so long as we were compelled to use the fat.

In addition to the seals we had secured a few Adélie penguins, and these were reserved to be used, one each day in the morning hoosh, where they were a great success. Seal has little flavour, and although so hungry, we soon became very tired of our continual seal hoosh. The penguin gave a distinct flavour to the morning hoosh, and so made this taste like a different meal, and it was probably due to these and a few other flavourings which I shall mention later that we were able to enjoy the otherwise never-varying seal hooshes for so many months.

I have already made mention of the biscuit ration, and now it just remains for me to enumerate the few other articles of diet which we possessed, and which were so scanty that they became to us the symbol of luxury itself. Half of the biscuit, sugar, chocolate, and cocoa were put aside in order to give us a month's sledging food at half-ration for our journey down the coast, and this left only a very meagre allowance for the winter. When this small amount was portioned out, I found that it was possible to serve out 12 lumps of sugar to each man every Sunday,  $1\frac{1}{2}$  oz. of chocolate every Saturday and every alternate Wednesday, and 25 raisins on the last day of each month. This division left just a little margin to allow of the celebration of birthdays and other special occasions.

We had fortunately saved a couple of bags of tea



during the summer sledge journey, and these also had been put away when the *Terra Nova* seemed likely not to arrive. In addition to this we had twelve tins of cocoa we could afford to use during the winter, and after calculation the following ration was decided upon. On five days of each week the cook threw into the potful of boiling water three teaspoonfuls of cocoa, and this just sufficed to disguise the flavour of blubber, which was the strongest characteristic of all water heated in our cookers. On Sundays three teaspoonfuls of tea performed the same office, and on Mondays the same tea-leaves were reboiled in the water, or we had the hot water by itself. The result was certainly neither nerve-destroying nor nourishing, but a man with sufficient imagination could taste tea quite distinctly in the first brew. The second I fear not even imagination could flavour, and so, towards the middle of the winter, it was quite usual for us to vote for hot water and allow the smokers to have the tea-leaves. These were then dried in tin dishes over the reading-lamps, mixed with the chips of wood in which the Oxo had been packed, and then smoked.

The small supply of Oxo we had brought ashore was certainly one of our greatest boons, for it also gave a distinct flavour of its own to the hoosh. Once every three days we had an "Oxo hoosh," and those mornings were always looked forward to with a keen anticipation.

This completes the sketch of our winter food rations except for occasional attempts at flavouring which I shall mention from time to time in the narrative, and also except for some radical changes which were rendered necessary by an unforeseen increase of the length of time we were obliged to stay at Inexpressible Island. I have no doubt myself now that the meagreness of the ration of seal-meat and blubber, however much it caused us to suffer at the time, was in reality a blessing in disguise. It can easily be seen that

what food we had contained a great amount of nourishment for its bulk, and if we had had as much as we could eat of meat and fat the probability is that our livers and digestions would not have stood the strain. We should have become dull and plethoric, and probably before the end of the six months the peace which ruled in the snow-cave would have departed, never to return. All of us know now what the pangs of hunger are really like—few men better, I think ; but throughout the greater part of the winter we kept extraordinarily fit considering the circumstances, and this must be attributed largely to the same cause as the gnawing pains which were our chief discomfort.

Until now we had still been living under sledging routine, and Dickason did the cooking in one tent and Browning in the other, but now each of us took it in turn to do the cooking for the day. As we were still using the primus, and only two meals a day had to be prepared, the cook's duties were not arduous, and he was able to take his share in the work of the day. It was not until later, when we were obliged to economize oil and invent blubber-stoves with which to cook, that the work took up all the time, not of one only but of two men. At present the cook joined the rest of us after breakfast and took his share of work at the cave or outside killing seals and penguins, only returning half an hour before the day's work ended in order to prepare the evening meal.

On the 21st the wind had blown itself clear, and although the breeze was still strong, it was possible to work outside. We were, therefore, divided into two working parties, and, while Campbell led a party over to the moraine for more gear, I took charge of the cave party and we finished the excavation of the interior. While the party were out Browning had a great slice of luck. He found a seal which had just come up on the icefoot, and, according to orders, he threw down

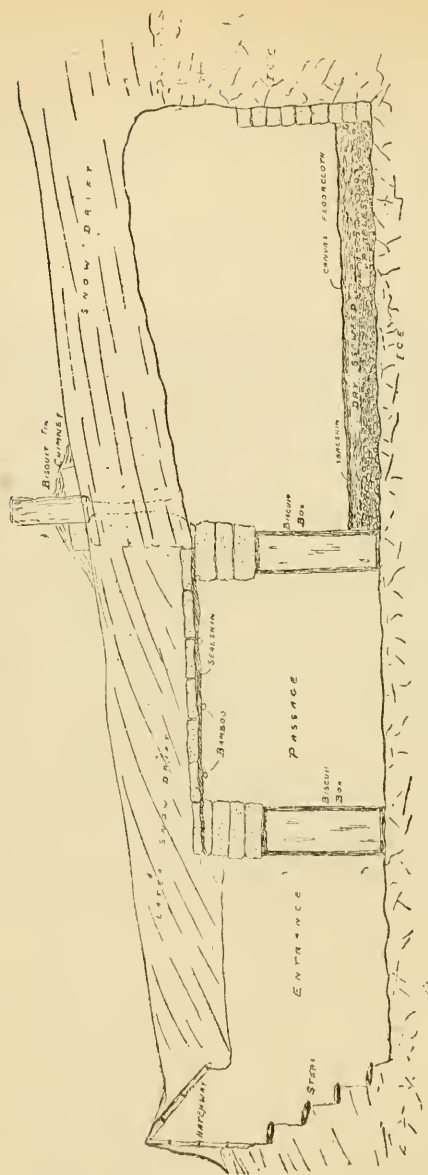




THE CAVE DOOR.

his load and killed it at once. Inside it he found thirty-six fish, which were not too far digested to be still eatable, and we had three each fried for dinner that night and three each for breakfast the next morning. Two of the fish were in the throat of the seal and were not yet dead when taken out. It was a red-letter day for us, and the discovery threw a glow of cheerfulness over the party. I should not like to have to eat that meal to-day, but at the time the fish seemed to us a dish fit for a king, and never have I enjoyed food more. The incident had also a further advantage, for it added a zest to our hunt for seals. We never again found a seal with an eatable meal inside him, but we were always hoping to do so, and a kill was therefore always a gamble. Whenever a seal was sighted in future, some one said, "Fish!" and then there was always a scramble to reach the beast first.

The day after the completion of the pick-and-shovel work in the cave we fixed up a neat door of biscuit-boxes and snow-blocks. Two biscuit-boxes were erected on end, one on either side of the entrance, the third was laid across the top, and then the rest of the entrance was filled in with snow-blocks. The upright boxes were then spaced so that we could pass the big cookers in and out without difficulty, and all crannies and holes were filled up with snow. It was now that we began to appreciate our blubber-lamps, for all daylight was excluded by the new door, and the lamps had to be kept burning all the time. The snow-blocks we required were quarried with our sheath-knives from a portion of the drift which was firm and yet fairly soft, and as soon as the door was completed more of these were passed in and were built into a wall round the inside of the ice-cave in order to improve the insulation. Finally, before the working party came in for their evening hoosh, an ice-axe was forced across the passage at the doorway and a sack was attached to



SECTION OF IGLOO.



the shaft of this with spun yarn. When this was allowed to hang down it closed the door completely, and this night was the first warm night we had spent in the cave.

When once the bottom tier of snow-blocks had been laid round all four walls of the cave, we were able to turn our attention to insulating the floor, and the first stage was the covering of the whole floor with a layer of pebbles and fine gravel several inches thick. On this, again, was spread a thick bed of the dried seaweed from the raised beach, and this last expedient probably added more to our comfort during the winter than any other single thing. We were never more troubled with cold beds, for the seaweed was an excellent insulating material, and when it was covered with a tent-cloth our bags kept quite dry and ourselves quite warm.

As soon as the floor was well lined we resumed work on the snow-block wall, and two or three days saw that completed as far as we considered necessary. It had been originally intended to continue this insulating wall to the roof on all sides, but when we had built it up halfway we found the cave quite warm enough for our comfort, and found the unfinished wall very useful as a shelf for our reading-lamps, books, clothes, etc. While this wall was being finished I took my pick and cut out a shallow square trench, 3 feet by 3 feet by 6 inches deep, in the corner of the cave nearest the door, and this was paved with large flat stones and dedicated to the cooks. For many months this made quite a satisfactory hearth, and it was only towards the end of our stay that it gave any trouble.

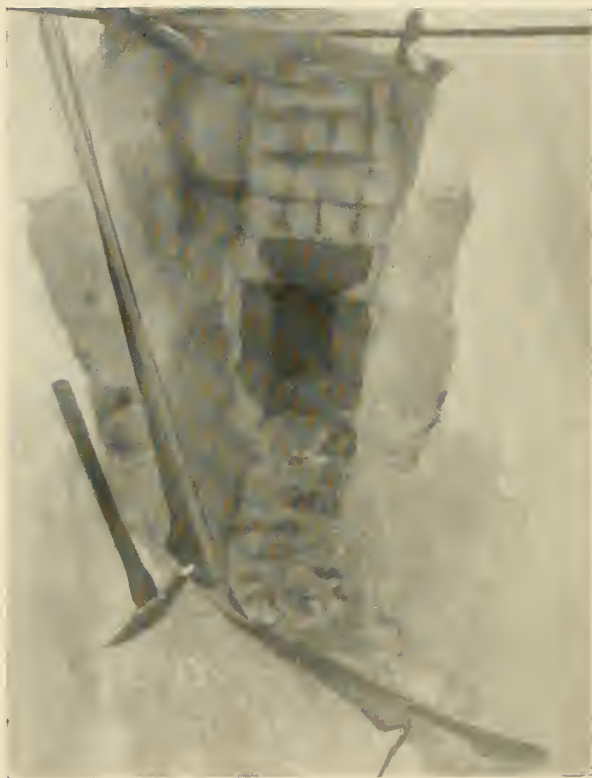
Since March 20th I had been watching the oil consumption very closely and found that it was being used much too fast. Until now work had been constantly going on in the interior of the cave, but now that this was finished in all essentials it was possible to experiment with blubber-stoves, and, accordingly, March 27th

saw the first attempt at cooking with blubber. Four stoves were made out of oil-cans. Each can was cut through about 3 inches from the bottom by means of a tin-opener ; the upper portion, inverted, was used as a reservoir for oil, and the lower portion was used as a stove. These first stoves were fed with oil which was burnt on a wick, and they had two or three disadvantages. Their chief drawback was the necessity of using two of them to fry out oil enough to keep all four going while we attempted to cook the hoosh over the other two. The wick system also was never a success. The wicks were made of pieces of tarred rope, and they did not burn too well. Either they gave very little heat indeed, their flame being closely comparable with that from our reading-lamps, or else, if there was only a little oil in the tin, they burnt too furiously altogether for a short time and then promptly went out. Indeed, at times, when we forgot that the cave was of ice we feared that it would be burnt over our heads.

The only thing to do, however, was to go on steadily experimenting with all the means at our disposal. One of the effects of these experiments was soon all-pervading, for everything became black with soot after the first day with the lamps, and we ourselves rapidly harmonized with the prevailing colour. Our clothes were soaked through and through with blubber and the soot clung to them and would not be removed. Roof, walls, sleeping-bags, cooking utensils, and food-boxes became blacker and blacker, and the transformation of the party and equipment culminated when Browning used some of the dried seaweed to give a fillip to the fires. The experiment was a great success, and the yield of oil from the frying-pans was phenomenal, but he put his fires out too suddenly in the evening and nearly drove us into the outer air.

While the cooks were thus experimenting with the stoves the rest of the party worked outside. Three





THE SHAFT IN PROCESS OF BUILDING.

Looking towards the door of the cave.

of us worked pretty continuously on the shaft, cutting outward through the drift on a level with the floor of the cave, and thus we made a passage several yards long. As I cut this out Campbell and Dickason roofed over the shaft with a framework of bamboos, covered these with frozen strips of sealskin, and then cut snow-blocks and laid them over all. The passage was thus roofed over but for a small opening flush with the surface of the drift at its far end, and this was covered with a sealskin which was light enough to be easily prised up from below. We were thus almost hermetically sealed up, and quite snug and warm, but the ventilation was none too good, and the smoke from the blubber-stoves during the day nearly drove us mad.

The end of March, therefore, found us settled down in a weatherproof home, and more comfortable than we had been for some time. It is true that all our home-made equipment was still in the experimental stage, and the stoves in particular were not much practical use at present, but we had been slowly improving all the month, and there was now some prospect of getting through the winter successfully—always providing we secured some more seals and penguins.

The last day of each month throughout the winter was kept by us as a fête, and the 31st of March, the first of these, was therefore celebrated by serving out twenty-five muscatel raisins per man. These were certainly the cleanest-tasting food we had had for a long time, and none of us will ever enjoy the flavour of raisins so much in the future as we did on this and similar days. There was no waste at all on these occasions ; the stones were all eaten and the stalks smoked or eaten according to taste.

A shortage of tobacco was one of the trials which loomed in the near future for most of us. I am a non-smoker myself, but all the tobacco we possessed was only enough to give the other five men about one

pipe a day for three months. The more careful of the smokers, therefore, were already casting about for ways and means of helping out this luxury, and several substitutes had been tried. We had with us a sledge-meter, which Davies the ship's carpenter had made out of teak, and the haft of this was broken across by Campbell and a piece served out to each smoker. The wood was then shaved off in chips, mixed with a small proportion of tobacco, and smoked. Later on the white wood shavings in which the Oxo tins had been kept were also commandeered and used in the same way. The use of tea-leaves I have already referred to, but the climax was reached when the would-be smokers were reduced to burning the senna-graes which we used to keep our feet warm in our fur boots. Dickason was heard on one occasion ruminating as to whether he could possibly convert a pair of hair-socks into tobacco, but whether the experiment was carried out I do not remember. In spite of all substitutes the number of non-smokers in the party increased rapidly, for most of the men did not restrict themselves to one pipe a day. By Midsummer Day only one regular smoker remained—Levick—and he joined the ranks of the non-smokers some time before we were able to leave the hut.

In spite of, or, as I have suggested, perhaps because of the short ration our general health remained very fair, and the only troubles were due to the enforced use of sea water instead of salt, and to the diet of unboiled or only slightly boiled meat. Soon after the end of the sledge journey all our salt had given out except one tin, which I held back as an emergency ration, and we had had to make our hoosh with sea water in order to make it palatable. At first all of us were affected by this, but soon the effects wore off and Browning alone failed to become used to the sea-water hooshes. From the beginning of the winter he



had constantly recurring attacks of illness, and this was later to develop into one of the gravest of the problems we had to face. The rest of us grew to like the sea-water hooshes so much that we could never afterwards get much taste out of ordinary table salt, and preferred to use the sea water or sea ice as long as we could obtain it.

The sudden change to a diet of meat alone affected the whole party much more severely, and we were much longer getting over the effects of it. The least unpleasant of the results were severe twinges of rheumatism in hip and shoulder, and for some weeks after the change our discomforts were much increased by these troubles.

The chief effect of our detention on our minds had been a wave of depression which swept across the party during the last few days in February. This soon passed, however, and then the disturbance was banished from our minds in the daytime, and its only means of expression was by giving a definite direction to the subject of our dreams. At first these were almost entirely confined to the question of possible relief. Two or three of us every night would dream of the *Terra Nova*, and we had a strong idea that some of those on board were endeavouring to communicate with us. On one occasion Abbott woke up declaring that he heard a gunshot, and on another occasion Browning dreamt that he woke, and sitting up, he saw Campbell, Levick, and myself lying in our bags opposite to him, while beyond us was the ward-room of the *Terra Nova*, with Pennell, Drake, and Dennistoun sitting at the table and rocking to and fro, saying, "We can't reach them! We can't reach them!" These dreams of relief were interspersed with others in which we saw disaster overtake the Southern Party, or the *Terra Nova* on her way to New Zealand, while Amundsen and his men also figured frequently.

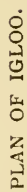
As time went on and the short ration began to make

itself felt the theme of the dreams became more varied. At first dreams of food alternated pretty regularly with dreams of relief and catastrophe, but soon food dreams predominated over all others, and every night we sat at a banquet and saw the provisions whisked away from before our eyes as we commenced to eat, or we suddenly remembered there was a shop round the corner where we could buy as much food, tobacco, or matches as we wanted. Cursing ourselves for our stupidity, we would walk round to buy, only to find that it was early closing day and that the shop was shut. One curious thing about these food dreams, which may perhaps be explained by a difference in temperament, was the fact that Levick almost invariably went through the whole of his meal before he woke up, while in my own case, and as far as I could gather in that of the rest of the party, we invariably woke up before we started to eat. It may seem absurd, but as we grew hungrier we felt that the former had a distinct and almost an unfair advantage over us, though we could always listen with relish to his description of a City dinner or even of an elaborate afternoon tea of which he had just partaken. Later in the winter the food dreams remained in the majority, but dreams of relief disappeared almost entirely, being replaced by a different type of dream, which was a queer jumble of things past, present, and to come, though the present played the greater part in them. I will later quote from my diary the descriptions, written down at the time, of one or two of these dreams.

I have not yet described the arrangement of the inside of the cave, but the accompanying plan will give a better idea than any description could do.

It will be seen that the floor space was divided into two portions as nearly equal as possible, while a third smaller space was occupied by the galley.

Of these two major portions one was the property of



## PLAN OF IGLOO.

the three men and the other of the three officers. Each man used that portion of the insulation wall which was immediately adjacent to his bag as a shelf, and he was allowed to keep his spare clothes, books, etc., on this or under his head. As I was commissariat officer, the few boxes of food were grouped alongside and across the end of my bag, so that they were easily accessible without moving. They restricted my movements to a certain extent, but, on the whole, this arrangement proved very satisfactory, and it was certainly a great boon to be able to serve out the food without trampling over other people and their bags.

All this time the wind had continued blowing hard, and our excursions outside were restricted entirely to utilitarian ones. In spite of the fact that the cave was only 5 feet 6 inches in height, and so we could never stand upright, our clothes were too thin and the wind was too keen to entice us into any walks of long duration simply for the sake of exercise. The walks we relied on to keep us fit were those that were strictly necessary for the preservation of the party. The daily patrol of the icefoot in search of seals, the trips to and from the different depôts and along the icefoot with meat and blubber, the work in the shaft leading to the cave in the sides of which we were hollowing out small chambers to hold our stores, and the trips for such things as stones, snow-blocks, and seaweed to insulate the cave comprised the sum total of the exercise we were able to obtain during the winter.

It was also true that the more we worked outside the more painful were the pangs of hunger, and a hard day's work meant a considerable accession in physical discomfort. Our one great discovery in the eatable line, which to some extent neutralized this, was the use of ice soaked in seal's blood instead of pure ice for our hooshes. When a seal was butchered, the hot blood melted down into the ice, and the pool

thus formed froze solid a few hours later. Then one of us would go down with a pick and shovel and a sack, dig up this mixture of blood and ice, and carry it to the drift. Part of it was then boiled up with the hoosh, and this made a gravy in which it was possible to stand a spoon upright. This greatly improved the hoosh, and made it more nourishing and certainly much more filling. After a pot and a half of this gravy we did feel as if we had had a meal, if but a small one, and we were fit for quite a good day's work.

## CHAPTER XVIII

### APRIL

Slightly finer weather—Effect of the constant gales on the spirits of the party—Accident with a blubber-lamp—We gamble for the crumbs in the bottom of the March biscuit tin—Hoosh prepared over the blubber-stove—Amusements—Reading and singing—Our Saturday and Sunday concerts—Three more Weddell seals secured—Trials of the cook—The first radical improvement in our blubber-stoves—Winding watches in the dark to tell the time—We make a chimney for the cave—Effect of drift snow—The sea remains open.

APRIL was ushered in by two comparatively fine days, when the wind did not exceed medium force, and, indeed, this month was the finest we experienced during the winter. On one or two occasions the weather was almost calm for fifteen or sixteen hours in succession, and it was undoubtedly to this that we owed our success in completing the number of seals necessary for our bare subsistence during the winter. The occasional cessation of the wind was very welcome indeed, for by now the never-ending gales were beginning to take the heart out of us. We had long since exhausted our vocabulary on the subject, and when circumstances compelled us to work outside we were reduced to a dogged silence, for our tempers were so much on edge that conversation was impossible. Most of this work involved the carrying of heavy loads, and it was almost an hourly occurrence for one or other of us to be flung down by the wind amongst the huge granite boulders,



which made walking at Evans' Coves arduous even in calm weather. Indeed, as Levick remarked one day, the road to hell might be paved with good intentions, but to us it seemed probable that hell itself would be paved something after the style of Inexpressible Island.

The wind remained always gusty, and if one did not fall backwards in the gusts one was liable to fall forwards in the lulls, and, when once down, the load of meat, penguins, or blubber successfully prevented any getting up. One could only lie on one's back and shake one's fist at the wind while tears of rage started to one's eyes and the mind was simply seething with impotent anger. If it were possible for such a situation to have any good side, it was this: When once out of the wind and in the cave the relief afforded by the calm atmosphere was so great that for some hour or so discomforts were forgotten in the relief from the battle against the insensate fury of the wind. There was nothing which strained our patience so near to breaking-point as did this wind, and I think that a very little more would have tipped over the scale and reduced us all to mere automatons, or, worse still, have deprived us of our sanity. An ordinary gale can be sufficiently exasperating at times, and any one who has experienced a strong wind in temperate climates can form just the slightest idea of what this unceasing downdraught from the plateau meant to us. Imagine your stiff gale almost doubled in force, its temperature during most of the time below zero, so that it is impossible to face it without receiving a frost-bite somewhere, and the same wind blowing week after week. Then imagine a party of men weakened by constant hunger, clad in light summer clothing which is rent in many places and with feet and hands clad in greasy socks and mits. Place the two in contact with one another and you will have a combination

which is going to try any one of those men to the uttermost.

The month did not start too well for me, for on the 1st I had an accident with my blubber reading-lamp, which had unpleasant consequences. One or two of the oil-can blubber-stoves had been discarded by the cooks as being inefficient, and we had converted these into reading-lamps, which were larger than usual and gave rather more light. I had placed my lamp too near the edge of the snow-block wall alongside my bag, and as the oil in the lamp heated it thawed its way unevenly into one of the blocks, developing a tilt, until without warning it slid forward and precipitated itself and about half a pint of oil over the ruck-sack, which contained my spare clothes, and over the floorcloth under my bag. I rolled up the latter hurriedly and scraped the floorcloth thoroughly with a sheath-knife; but it was impossible to undo all the damage, and for the rest of the winter my bag and floor space were always more greasy than those of any of the others.

Similar accidents were, fortunately, uncommon during the winter, but an even worse one happened to Brown-ing one day, when the lamp he was using turned a somersault and landed right inside his bag. Here, again, prompt measures speedily reduced the amount of damage, but a legacy was left in the shape of greasy bag and greasy clothes.

Our biscuit ration had been arranged so that each tin lasted a month, and so on this day we finished off the March tin and cast lots for the crumbs at the bottom. In all cases when there was a little extra food such as this which was not worth dividing the method used was that which I understand was first adopted in the gunroom mess of the Navy.

One man was asked to select a word with more letters in it than there were members of the party. Each of the other men would then choose a letter of

this word, the second, third, fifth, etc., and finally one of the others would give a certain letter to the man who had selected the word. The word that had been chosen was then announced, and the man who had taken the letter nearest to A had the delicacy. For instance, supposing the word chosen was "facetious," and the letters were the third, fourth, fifth, seventh, ninth, and first, then the man who had the third would win the prize because *c* is nearer to *a* than *e*, *t*, *o*, *s*, or *f*. In this case the fortunate man won a mixture which consisted of about equal parts of biscuit, granite, paraffin, snow, ice, and frozen meat.

On the 2nd of April the hoosh for the first time was prepared over the blubber-stoves, each of which had been provided with several wicks. The experiment was a success, and the hoosh boiled in an hour. This meant a great saving of oil, for we knew now that we need not use the paraffin any longer for this part of the evening meal. Our supply of rope, however, was very little, and it was plain that some substitute for the numerous wicks must be sought for. This first day the hoosh was cooked over our own blubber-stove was another red-letter day in our calendar, and we spent a very jovial evening in consequence. Undoubtedly the evenings were the pleasantest time of the day in these months. We all managed to keep thoughts of home away as a rule, and after the evening meal we could enjoy ourselves.

First of all we waited until the messmen for the day had finished their work, and then when they had turned in and all diaries were written up Levick would read us a chapter from "David Copperfield." This one chapter a night became a regular institution with us from now until we had finished all three of the books we had with us. "David Copperfield" lasted us for some sixty nights, and at the end of that time

we were very sorry to part with him. The "Life of Stevenson," however, proved an excellent substitute, and that, again, lasted us for two or three weeks, and was followed by "Simon the Jester." This last book we found lasted us much less time, for we became one and all fascinated with Simon's character, and one chapter a night was not enough. We demanded two or three, and Levick allowed us to keep him reading, and in a few days the last of our books was finished. In addition to these three we had with us two copies of the *Review of Reviews*, and these were read from cover to cover, advertisements and all.

We had carried one or two other magazines on the summer journey, but these, unfortunately, I had used for wrapping up specimens, and I often regretted this fact during the winter. The "Decameron" and a couple of Max Pemberton's novels which the men had brought completed our list of literature, with the exception of a typed copy of my first year's diary. This latter I used to read on Sundays, and we used to contrast our life on the same date at Cape Adare with our present existence in the snow-cave. On Sundays also Campbell read a chapter from a pocket edition of the New Testament we had with us, and afterwards we sang what hymns we could remember.

Taking all things into consideration, the Sunday concerts were a great success. The only man with a voice in the party was Abbott, and he was not blessed with a good memory. Dickason and Browning had once been in a choir, and still remembered bits of the *Te Deum* and some fragments of hymns, and I also knew a few of the latter. Between us we managed to patch up about a dozen hymns, which sounded something like they were meant to by their authors. Where we could not think of a sentence we made it up, and I was surprised when I returned to find that, while we had frequently only been singing two or



A CAVE HOLLOVED OUT IN A SINGLE GRANITE BOULDER.





three verses when four or five had been written, in one case at least we had made up one more verse than actually existed. Although a man of no pretensions to voice at all, I was a tower of strength in these Sunday concerts, for when I was a boy I had been taken twice every Sunday to a Wesleyan chapel, and the only book I was allowed to look at during the sermons (which were unreasonably long for children to be expected to listen to) was the hymn-book. Consequently I amused myself by learning all my favourite hymns by heart, and I have never forgotten some of them. My diligence in those far-off days was now amply repaid, for the thing which went farthest towards making our evenings pass pleasantly was the ability to make a "cheerful noise." We had very little idea of tune, but hymn tunes are simple and very fine, and I believe we all enjoyed these concerts even more than those which marked the Saturday night.

Saturday night also was devoted to song. After dinner we drank to "Sweethearts and Wives" in our apology for cocoa, and then we sang the old favourites which will be recognized by sailors and travellers all the world over. Such songs as "Rolling Home," "Lowlands," "Thora," "The Buffalo Battery," "Mandalay," and many another will remind us of these Saturday night concerts to our dying day, and when we hear them again our thoughts will swing back across time and space to the drift where lie the remains of our cave home. Indeed, so pleasant do those evenings appear now to me, and so softening is the influence of time on the memory, that already as I look back on them from a comfortable chair in my rooms in Cambridge it is with more than a slight tinge of regret I realize that they are gone never to return.

On the afternoon of the 5th of April three more Weddells were sighted, and we killed and butchered these. The next day or two were occupied by all

hands putting this meat and the skins, with the blubber attached, into a safe position at the shoreward edge of the icefoot, while a considerable portion of the meat I put aside ready for the spring sledging journey.

The blubber-stove smoked so badly on this day that we were obliged to put it out in the shaft and finish the cooking with the primus. Up till this time the hut possessed no chimney, for we were so afraid of weakening the roof that we had not dared to make one. In consequence all the smoke had to meander out through the upper portion of the doorway, and as this was only 2 feet in height the whole of the cave above this height was filled with the acrid, reddish-brown fumes of the burning blubber, and it was impossible to exist for long inside unless one lay down in one's bag. The cook for the day would stand it as long as he could, and then would make a dash for the shaft, where he would indulge in a paroxysm of coughing and have a short rest in the purer air while his mate took a spell with the fires. At any time during the winter our lungs must have been black with the carbon from this smoke, so that we were no cleaner within than we were outside. The general results of a long spell in these penetrating fumes were throbbing eyes and a nasty headache, but the greatest trial of all was that our noses and eyes streamed so much that we could taste nothing when mealtime came. There seems no doubt that the fierce blubber fires we were burning were volatilizing a considerable portion of the oils in the blubber, and it was the products of this fractional distillation which caused the trouble.

During most days when the draught was poor we suffered to a certain extent from these fumes, and frequently the cook was obliged to desist from his labours and sit with his eyes tightly closed and the tears streaming from them, vainly endeavouring to frame some expression which might soothe his wounded feelings.

On the 12th I walked over to our depôt at the Hell's Gate moraine, and brought back a load of bamboos and oil. Our old blubber-chopping board, which had been made out of the lid of a chocolate-box when we first started to use blubber, had gradually been whittled away for spills, and I brought over the lid of one of the oil-boxes to replace it. This was of stout wood and served us effectually for the rest of the winter. It was very pleasant out, though quite cold. After my return to the hut I borrowed Dickason's scissors and trimmed up my moustache and beard, removing it from round my mouth as far as was possible.

The 14th saw another step forward in the evolution of the cooking-stove. We compromised now between feeding the fire with hot oil and with strips of solid blubber. A good fire was obtained first of all by lighting a rope wick soaked in oil, then thin slices of blubber were fried over this and the hot oil was poured into the lamp until the latter was well heated and a flame a foot or two high was obtained. The hoosh-pot was then fixed over the fire, and the latter was fed with strips of blubber placed on the edge of the stove. These were heated by the flame and the oil dripped from them into the stove.

This method was a great improvement on any yet adopted, but there was still a likelihood of the fire going out if it was left untended for even a few minutes, and it was clear that much remained to be done before the stove was as perfect as we could make it with the available material.

Since the shaft had been roofed over and the outer door fixed, not so much as a glimmer of light penetrated into the cave even at midday. It was necessary, therefore, to hit on some method by which we could tell the time in the dark in the morning, for we could not afford to waste matches. Three of the

members of the party carried chronometers, and Campbell determined to use these for the purpose. When he woke in the morning he wound his watch and could tell the time within half an hour by the number of turns he could make. Eight winds meant that twenty-four hours had elapsed since the last winding, and therefore that it was time to rise. Supposing, therefore, that he found that seven turns completely wound the watch, he knew that the time was three hours short of getting-up time, and lay in his bag asleep or awake until he thought the three hours had gone. He would then wake Levick and ask him to wind his watch. Levick perhaps would make it half an hour too early, and then after another spell Dickason was called, and he lit a match and lighted the reading-lamps, which had been ready snuffed and prepared overnight.

All three watches were then wound to their full extent, so as to make a starting-off point for the next morning. After the lamps were once lit they were never allowed to go out at the same time until work was finished the next night, and so successful was this routine that only on two occasions during the winter was our allowance of one match a day overstepped.

The new fires had smoked so badly the last day or two that we had been obliged to try the experiment of doing the cooking in one of the alcoves we had picked out from the sides of the shaft, but this work was really too cold for the cooks to stand it very well. A considerable portion of the smoke, too, found its way through the door into the hut, and thus we had all the benefit of the smoke without the benefit of the heat of the stove. We decided then that, whether the roof collapsed or not, we must have a chimney, and on the 27th I picked a hole through the roof with one of the Alpine axes, and we once more had the fires inside. At night the new chimney, which was only 2 or 3 inches in diameter, was plugged with

a ball of tightly rolled penguin-skin, and we could thus stop the draught at will. We found this chimney a great improvement, but from now on we felt decidedly more anxious about the safety of the roof, across which a large crack had appeared during the last few days.

So far, fortunately enough, we had not been troubled very much by drift-bearing winds, for the cold westerly wind which had been our chief enemy was fairly free from snow. This immunity was not to last, however, and on the 29th we woke in the morning to find the shaft completely filled with snow. On such a morning as this the first duty of the messman was to dig his way out to the open air, and I think that the whole party would agree that one of the unpleasantest tasks the messman had to tackle was this clearing of the shaft after a blizzard. It was necessary to burrow through the snow before a way could be made through which to throw it out, and the grease on our wind-clothes caused large masses of the drift to adhere to them. Before returning to our bags we always brushed as much of this off as possible, but we were never able to get rid of it all.

Outside the shaft the unfortunate shoveller would find himself enveloped in a whirl of snow so thick and bewildering that it was necessary to think hard before he could gather his wits together and convince himself that death by suffocation was not imminent. Few things are more unpleasant than working in a heavy drift, and unless one keeps one's head it is very easy to get lost within a yard or two of home.

Once the work was over it was very pleasant to get back into the calm atmosphere of our snowdrift home, and certainly the cave was a very snug and weather-proof shelter in a blizzard. The heaviest gale outside was only indicated by the sibilant hiss of the drift on the roof, or the murmur of an unusually strong gust,



Such noise as there was was just enough to increase our feeling of security by keeping before our minds the thought of the strife beyond our gates.

This heavy drift-bearing wind continued until the end of the month, and the choking of the chimney and shaft gave us endless trouble with the fires. When the drift ceased towards the end of the gale, however, we again managed to clear out the shaft and chimney, and life in the cave became more bearable, but once again we found that the wind had removed every vestige of sea ice from the bay. This did not give us any anxiety at the time, for the continual winds were quite adequate to account for its absence. We thought that the winds we were having were rather extended equinoctial gales, and we still hoped for a calm winter, which would give the sea an opportunity to freeze over. Whenever the wind dropped for a few minutes a scum of ice crystals appeared, only to be driven north by the next gust, it is true ; but still it was evident that the sea would freeze if it were given a chance, and we felt sure that the chance would come.



## CHAPTER XIX

### THE DEPARTURE OF THE SUN—THE REAL WINTER COMMENCES

The last of the sun—Severe frost-bites—The perfection of the blubber-stoves—We use old seal-bones for firebricks—The relief party which proved to be Emperor penguins—We add them to our larder—Trials of a messman—Chipping meat with a geological hammer and chisel—The “oven”—Our final routine—The messman’s day—Work outside still unpleasant—Contrast makes for appreciation of comfort.

THE days were now drawing in very much, and, although theoretically the sun should have been still with us until well on into May, we actually saw the last of him on April 27th. Weather conditions afterwards were such that we did not get away from the cave very much, and some hills to the north of Inexpressible Island prevented us from seeing the northern horizon from the drift.

May was ushered in quite appropriately with a blighting westerly wind. The sea ice which had formed again on the bay during the last day or two of April was driven out to the horizon, and several members of the party who were working outside sustained severe frost-bites. Browning in particular returned to the cave with his whole hand and wrist quite dead and white, and he was some time restoring its circulation. As seals were still scarce we still further reduced the meat ration until we were eating only a bare sufficiency to

keep us fit for our work. I calculated that we had enough to keep us going on this new ration until the light came back, but the frequent recurrence of frost-bites seemed already to indicate that early spring sledging would not be advisable, at any rate for some members of the party. We could only hope that these bites were due rather to the withering nature of the wind than to an impaired power of resistance to cold developed in us by the hard conditions of our life.

It was at the beginning of this month that our blubber-stoves reached the high level of efficiency which they successfully maintained for the rest of the winter. Until now the main drawback had been the impossibility of regulating the feeding of the fires and the difficulty of starting them without rope or lampwick. The first of these difficulties in particular would have to be overcome before the stoves could be said to be a complete success, and we had for some time recognized that what we wanted was some substance that was porous and would soak up the oil so that it would burn at a fairly constant rate.

I have already mentioned the occurrence of old bleached skeletons of seal on the beach near the cave, and it was these bones which finally solved our difficulty. Campbell had one day brought up some of the smaller of the old dried bones and had tried to use them as a substitute for the string wick in our reading lamps. The experiment was not quite successful enough to be practical, but it struck Levick that fragments of these bones would be just the thing we wanted to enable us to control the fires, and on the next day that he and I were messmen he broke up some pieces of rib-bones and arranged them as a flooring in the oil-tin we were using as a stove. When once they were hot they sucked up the oil until they were saturated, and they acted beautifully. The fires that day burnt with a steady, clear flame, with much less "smitch" than usual, and the

time in which the hoosh was prepared was reduced by almost a third. In fact, the first day's cooking with them was too successful, for the evening meal was ready, not before we wanted it, for we could have eaten it straight on top of the morning one, but so early that it left an unusually long interval between it and the morning meal next day, an interval which was painful in the extreme. It was easy, however, to arrange that this should not happen another time, and then the new fuel became a permanent improvement and much reduced the burden of the cook.

We also found that the new fires had another advantage over the old type. If by any mischance they were extinguished, as sometimes happened, they could be relighted immediately by the simple application of a lighted spill, and did not require coaxing. In fact, they behaved very much like a primus does when it has been burning for some time and has been put out by the draught and is then relighted. Volatile gases would be streaming upwards from the heated bones, and these would take fire immediately. When the bone fires were well alight they were kept going by laying small strips of blubber on the edge of the tin. The oil from these then dripped into the bottom of the tin, and when the piece of blubber was charred it was either eaten by the cook or tipped into the tin and burned. Our final improvement was made a week or so later, when by means of a marlin-spike we were able to suspend these strips of blubber well over the bones so that the oil dropped directly on to them. Then we were able to use larger pieces of blubber, and the fires went without tending for twenty minutes at a time. Although after this we tried alterations from time to time, none of them were a success, and the stove as it now stood was never permanently displaced.

The wind continued to blow strongly until the 5th

of May, but then came a lull, which lasted through that day and well into the following. There was still a slight breeze, but the air was calmer and there seemed some chance of seals coming up. Our patrols along the icefoot were therefore resumed, but without any result at first. On the 6th, however, when Campbell and I were out we saw four figures about half a mile out on the fast sea ice which had recently formed on the back of Terra Nova Bay, and which, being under the shelter of the land, had not been removed by the wind. Our minds at once flew to the possibility of relief, for the figures looked too big for penguins, and Campbell went back to the cave for his glasses and also to fetch Abbott and an ice-axe in case they should be penguins after all.

The light was very bad, and the figures were advancing towards the island in extended order as if they were a sledge party, while at one time our imaginations supplied the sledge behind them.

They were heading straight from the edge of the open water, however, and it was difficult to explain their position if they were men. By the time Campbell had returned the light had improved a good deal, and without the glasses we could see that the strange figures were four Emperors advancing in their usual stately fashion. We at once started off to intercept them, and after some trouble with a very mushy tide-crack we managed to reach the sea ice on which they were. The walk across the ice was very toilsome, and we were not very sure of its safety, but we had to have those birds, and after a short but strenuous chase I secured three of them with the ice-axe, while Abbott made short work of the other with his knife. We then tied a rope we had brought with us to their necks and dragged them home across the sea ice on their breasts, which are adapted by Nature for tobogganning. They came along easily as far as the icefoot, and there



EMPEROR AND ADÉLIE PENGUINS.





we cleaned them ; but after this we were each obliged to take one on our shoulders and portage them over the boulders between the icefoot and the drift. The birds were in splendid condition, for they must have been on their way down the coast for the breeding season at Cape Crozier, and they were coated with a layer of fat an inch or more thick in preparation for their winter fast. Each must have weighed between 80 and 90 lb., as we knew to our cost before we reached the cave ; and I should think that we secured more than 100 lb. of meat off the four. In honour of the occasion I served out an extra biscuit all round, and we then discussed the possibility of using one as a messenger to our people in McMurdo Sound if any other party should arrive and we could spare one. We felt pretty certain that the birds were heading for Cape Crozier, and we knew that part of Captain Scott's programme in either the first or the second year was a visit to the Emperor rookery there, so the proposal was not so chimerical as appeared at first sight. Nothing came of it, however, for we saw no more Emperors until we were ready to start down the coast ourselves and be our own messengers.

The fires had been unusually smoky to-day, and as a consequence Dickason, who was cook, had been obliged to retire to bed with his eyes so inflamed that he could not see. This was the worst case we had had as yet of this complaint, but scarcely a day passed without one or more of us suffering severe discomfort in this way. If the draught was fairly good and the fires behaved well, the trouble was usually confined to the cook, but if the chimney was at all choked all hands suffered. The term "smoke" did not seem adequate to express the oily brown fumes which rose from the blubber-stoves, but Browning provided us with a sufficiently expressive word from his West Country vocabulary, and the terms "smitch" and "smitch-

blindness " had by now become a regular part of our vocabulary.

This day, May 6th, also saw another epoch-making improvement in our domestic economy. Until now all the meat for our hooshes had been brought in from outside as it was required, and then the messman would sit down on the floor in the draught from the door and would hack at the frozen joint with my geological hammer and chisel. I think it would be very difficult to find a more unsatisfactory job than this method of preparing our hoosh. Our little reading-lamps gave light sufficient to read by if the book was held fairly close to them, but they were of very little use for illuminating the hut generally. Two of them were usually available for the use of the messman and cook, and of these one had to be kept handy for the cook to light his spills so that he could examine the hoosh from time to time.

The messman, therefore, had the use of one lamp, which gave about half as much light as a match. This was just sufficient to throw a small circle of light on the joint he was quarrying, and no more, so that all the rest of the floor was lost in impenetrable darkness.

The only clear space of floor was immediately in front of the door, so that the unfortunate man was not only exposed to the full draught from the latter but he was also full in the fairway. He was thus liable to be interrupted by every one whose work took him in or out of the cave, and many were the sarcasms this gave rise to. In fact, the only alleviation of his position was the fact that he usually came out on top in these bouts, for it is not easy to be witty when one is squeezing oneself through an opening whose dimensions are about 2 feet 6 by 18 inches. The position in which the meat-chopping had to be done had also other disadvantages, not the least of which was the consequent filth of the floor. We were as careful as

possible where we walked in those days, but by this time the floors of cave and passage were both covered with blubber and soot so that when one lifted one's feet one's finneskoe came away from the floorcloth with a tearing sound and with obvious reluctance.

The joint of meat which was being operated on was kept as much as possible on the lid of a box saved for the purpose ; but this, like everything else, was greasy, and from time to time the joint would slip off the board on to the floor. Meanwhile as the shreds of meat were chiselled off they would fly all over the hut. Every now and then an exclamation would betray the fact that some one had been hit on the hand or on the face by a flying fragment, while after almost every hit pieces would strike the surrounding tins and boxes. After five minutes' work the butcher would stop and collect as many of the fallen fragments as possible and take up contributions from the occupants of the different bags and off the boxes and out of the cookers. By far the greater quantity of the meat, however, had to be collected off the floor, and the very feel of sealskin or floorcloth was so clammy and greasy as to cause a physical repulsion, while even now I do not like to think of the large proportion of foreign matter that must have gone into these early hooshes. Hungry though we were, we would sometimes feel doubtful if we could eat the resulting hoosh ; but as soon as the smell of the cooking rose all doubts were cast away, and the messman was as eager as any one.

While the work was therefore extremely distasteful from a mental point of view, the discomfort most decidedly had its physical aspects too. A geological hammer and chisel are not nice things to handle even on a cold day in England, and it can be imagined what they felt like in a draught of air that must have been well below zero. Whenever one's hand slipped off the canvas covering with which we had armed the

chisel a burn immediately resulted, and the work could only be carried out in short spells. After half an hour the hand which held the hammer would also be quite numb with the cold, for our greasy woollen mits were of little use to us, and we could not risk our fur mits by wearing them indoors. Then one could never be certain of hitting the chisel-head in the half light, and a blow on the fingers with a square-headed hammer is not the least painful way of restoring the circulation. Altogether this was easily the worst of the messman's duties, and any improvement in this direction would mean a decided alleviation in his position.

We had always been casting about in our minds for some method of thawing the meat out, and it had been suggested that a tripod over the fire was a possible solution of the difficulty. The idea of exposing the meat uncovered to the smoke of the fires, however, did not appeal to us, and the tripod was rejected. The next proposal was that we should suspend some sort of tin or box over the fire and thaw the smaller joints in this, and this plan seemed more feasible, but we had no available tin for some time. Now that the April biscuit-tin was emptied we decided to use that for this purpose, however, and accordingly a framework of bamboos was lashed together, under Campbell's direction, and the biscuit-tin was secured to these so that it was between the stove and the chimney and yet high above the fire. This acted beautifully, and we were pleased to find that when the joints had been in this for twenty-four hours they were thawed until the meat was of about the consistency of cheese and could be cut easily with a knife, just as we had been cutting the blubber in the past. This "oven," as we called it, would of course only take the smaller pieces of meat, but the larger joints were dealt with in future by suspending them near the fire from the framework

of the "oven." The side nearest the fire would then thaw out and be cut off, and the joint would be reslung with another portion near the flames.

In future it was part of the messman's day's work to see that the oven was filled with meat for the next day's consumption, and he was also expected to hang up an Adélie penguin to give it a chance to thaw out. Owing to their thick coat of feathers these birds took much longer to thaw than the meat, so we always kept four hung up near or on the oven, and the messman for the day skinned and butchered the meat of the one which appeared to him most thawed. Until this scheme was adopted the penguins also had been butchered by the same method I have just described, and if any one wishes to know what sort of success we made of the carving I can only suggest that he should take a duck with its feathers on to a refrigerating works, let it stay there for a week with a temperature at  $-40^{\circ}$  to ensure its being wholly frozen, and then try to skin it and carve it with a 4-lb. hammer and a large cold chisel. If he succeeds in getting more than a few ounces off the bird, I shall be surprised, and he will find that the greater part of that will be pieces of bone and other more undesirable things.

The oven and the new stoves now made the duties of the cook and messman much more bearable. All hands took their turn at these duties, and we were divided into pairs—Campbell and Abbott, Levick and myself, Dickason and Browning—each taking one day in three. For a description of the messman's day's work I will quote directly from my diary:—

"Economy in the consumption of oil is such a vital necessity with us that we have decided that the primus should no longer be used by the whole party, but that Dickason, who is easily our best operator, should take over charge of the lamp permanently. This he is very willing to do, and therefore he rises first in the



morning, lights the lamp, and puts on the hoosh prepared by the messman overnight. A few minutes before the hoosh boils he calls the cook and messman for the day. They dress, and one goes out for a weather report, while the other collects the mugs and prepares to serve out the breakfast.

"After the hoosh is declared cooked one messman serves it out with the pemmican-dipper into the mugs, which are stood on the inverted outer cover of the cooker, while the other holds the spill, and later hands the mugs round to their owners. The meal generally runs to about a mug and a half of meat and soup, of which about half a mug should be meat if the hoosh is a normal one. After the meal the messmen refill the reading-lamps for any one who wants oil, and then they turn in until eleven.

"At eleven the fireman for the day again turns out, flenses what blubber he thinks he will want for the day, lights the fire of bones and oil, and proceeds to fry enough oil for the day's consumption. Ten minutes before this is finished he calls his opposite number, who crawls out through the door with one of the cooker-covers, into which he chips enough fresh ice to nearly fill an inner cooker with water. He then comes in and fills one of the inner cookers which we keep for fresh water with this ice, and this is put on the fire when the oil is done. The time when this ice is melted should be as nearly as possible 1 p.m. As the ice melts down and takes up less room in the cooker it is his duty to add more as the cook requires it, for the latter by now is in such a state that he cannot be allowed to touch anything but the fire and the fire-blubber. As soon as enough water for the evening drink of cocoa and tea has been melted this pot is taken off the fire and the hoosh-pot is substituted for it.

"Meanwhile the messman has started on his coldest



job, and the only one for which under our present improved conditions it is necessary to use gloves. Salt ice certainly always is infernally cold, I suppose because of the brine in it and its consequent moistness at temperatures far below freezing-point. The ice in question is brought up from the icefoot and stored in one of the alcoves in the passage. Every day enough to fill the two ring-cookers has to be chopped with chisel or knife into oblong flakes not more than an inch thick in any place, so this operation takes some time.

“After this is accomplished the meat already chopped up by yesterday’s messman is put into the hoosh-pot, and any water left in the ring-cooker which was over the primus when the morning hoosh was cooked is added to the meat. The blubber is then chopped into neat little dice, and the pot is filled up with salt ice if necessary. The hoosh is then ready for the fire, which should be ready for it as near two o’clock as possible. At our present ration the meat for the evening meal should just over half fill the cooker, and the blubber should be half as much again. This is a very small meal, but we can afford no more.

“After the hoosh for the evening is finished, except for the addition of more salt ice from time to time as the contents of the pot settle down, there is seal meat enough for the two meals the next day to be cut up and a penguin to be skinned and butchered.

“Every scrap of available meat on the latter is used for the next morning’s hoosh, the kidneys are put into the evening hoosh as flavouring, and the heart and liver are set aside in one of the outhouses to wait there until Midwinter’s Day. The penguin takes a long time, and by the time it is finished it is four o’clock, and if the fires have been doing their duty the hoosh should be ready for serving out. After a lot of discussion and controversy we have elected to simmer the hoosh for half an hour, as we are convinced that boil-

ing it for any length of time destroys the value of the food, and while our ration is so short we want all the value we can get out of what food we do have. After simmering for just under the half-hour it is brought to the boil and then served out.

The hoosh is served out between 4 p.m. and 4.30 p.m., and immediately Dickason has finished his he lights the primus, and the pot containing the cocoa-water and the ring-cooker containing the salt ice for the morning hoosh are heated over this lamp.

"The stove is then removed to the shaft in order to minimize the 'smitch,' and the messman proceeds to fill up the hoosh-pot with the meat and blubber for the morning hoosh and to fetch in joints of meat to be thawed out in the oven and a penguin to be hung up over the fireplace. The cook then scrapes the bottom of the hoosh-pot to remove the coating of carbon deposited on it by the blubber smoke, and when the cocoa has been served out a little later he empties the water from the ring-cooker into the pot. He then fills the oil reading-lamps, and his day's work is over.

"After dinner the messman makes a final trip outside to empty the day's rubbish and to place any bones in a cache outside on the drift, where they will be easily found should we be reduced to living on them next year, and then he also turns in happy in the sense of a good day's work safely accomplished. So far we have had no accidents with the hoosh of a serious nature, but how long this immunity will last I do not know. Altogether there is just sufficient work now to keep both men fully occupied (for the fire requires constant attention), and the day comes as a welcome change after the two days spent in bed. In the early days the messman's 'day on' was a martyrdom, unrelieved by any pleasant moment until hooshtime in the evening; but those days are past and now we even look forward to it. Certainly it has always helped to pass the time.

Formerly we dreaded it so much that one's turn seemed to come round so quickly that the two days in between were almost negligible, and even now we mark the time, not as days but as periods of three days."

The foregoing description gives some idea of the duty of the cook and messman, and now the question naturally arises, What of the men who are off duty? Whether they had any occupation or not depended on the state of the weather. Throughout the whole of the winter the winds were so bad that except for passing observations science was definitely impossible, and, what is more, as I have already said, we seldom even found it possible to take any walks for the sake of exercise. On the few days when the weather was such that it was possible to remain out for any length of time without being frost-bitten, we were fully occupied with the provisioning of our winter quarters, and the fine days were so few and far between that we were often obliged to make the necessary trip whether the weather was good or not. Every few days there were bones to be fetched from the dried seal carcasses, seaweed from the beach, penguins from the depôt near the icefoot, and seal meat and blubber from the caches where we had stored the dead seals. Heavy loads had to be carried either over the huge boulders I have already described or else along the smooth, glistening surface of the icefoot, on which it was necessary to walk with stiff legs, feeling every step with the sole of the foot, and avoiding unevennesses as much as possible. Any slight inclination of the surface meant a slip, and if we once slipped the heavy loads on our backs prevented any speedy recovery.

Our summer wind-clothes were by this time thoroughly tattered and torn, and the continual crawling out of and into the cave had ruined the knees of the trousers altogether. The cloth was so rotten with grease that stitches would not hold, and patches tore out as soon

as they were put in. As a rule frost-bites are confined to one's uncovered or insufficiently protected extremities, but now the wind seared our bodies at every weak spot in the windproof armour and body frost-bites were common. Even where the wind-clothes were still whole the grease seemed to have impaired their resistance to cold. These summer clothes of ours, light as they were, were so encrusted with blubber that they would stand up by themselves in spite of frequent scrapings with knives and rubbing with bits of penguin-skin.

It is therefore quite understandable that we did not venture forth unless we were compelled to, and as the hut also was very cold we spent by far the greater part of our time in our sleeping-bags. We remained in our bags for breakfast, which was handed round by the messman, and after breakfast we lay down again until eleven. At eleven if the weather was sufficiently favourable we got up, dressed, and sallied forth to work, returning usually about three o'clock. If the weather was bad, we lay still and slept or dreamed away the time until hooshtime; for it was not until the evening that conversation became general. One of the greatest surprises of our behaviour during this winter was the unexpected way in which the whole party settled down to the inert vegetating existence without fretting or protest. Four of us, at any rate, are unusually active people, and cannot bear to be unoccupied in normal life, while I myself could never have believed that I could have been happy without something to read. Yet during the greater part of this inactive life we were certainly happy, as was witnessed especially by the seraphic state of our tempers, and, far from pining for books, I can remember many times when I could have been reading "Hints to Travellers" or the *Review of Reviews* and I preferred to lie and let my thoughts wander at their own sweet will. It had shown to all of us, I think, without doubt with how little

it is possible to be content, and it has been a most decisive proof that in many cases the luxuries of civilization only fulfil the wants they create. I do not for a moment say that any of us would care to repeat that winter ; indeed, I believe that another similar experience would kill most of us, or drive us mad, but it is certain that our pleasures during the hardest winter any of us are likely to see were as acute as our pains. We could get as much pleasure out of an unexpected lump of sugar, or a peaceful day after the trials of a day as messman, as the most costly luxury or the most entrancing holiday could give to us now.

Half the fascination an Antarctic expedition possesses is to be found in the sharpness of the contrasts experienced during its course, for it appears to be true that a hell one day is liable to make a heaven the next. It is probable, indeed, that here we have another of the clearest notes that together make up that elusive something we term, for want of a better name, "the Call of the Antarctic."



## CHAPTER XX

### MAINLY ABOUT FOOD

A page from my diary—Emperor meat an improvement on seal—Drips from the roof form icicles on our bags—Too oily hooshes—Speculation as to the fate of the ship—An over-baked tin of biscuits adds to our hunger—Citric acid tabloids as a sweet—The desire for “clean-tasting” food—Attempts at flavouring the hooshes—Seal’s liver, heart, kidneys, and brain—Seal’s brain our best luxury—Seaweed added to our diet, but not officially—The medicine-chest to the rescue—Ginger tabloids and mustard plasters for the hoosh—Flavours we had but did not want—We keep extraordinarily fit in spite of food troubles—Browning’s constant illness—Cheerfulness contributes more than anything to pull him through—Cracks in our roof—A close call: the whole of the party nearly asphyxiated—We keep a bamboo in the chimney to enable us to clean it at will.

IT has been the author’s object so far in this book to avoid the diary form as much as possible, but it is impossible to give a lifelike description of our routine, our thoughts, and our feelings during this abnormal life without the help of some extracts from the records written at the time. Nothing, for instance, can give a better idea of the trials we had to contend with and the pleasures we enjoyed than the following extract from my diary on May 7th :—

“While still in bed this morning we heard the gale blowing hard outside, and when we got up we found we were snowed in as we have never been before. During the morning Dickason and I tunnelled through the drift and have managed thus to extend the roof





THE AUTHOR. CHRISTMAS 1912.

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of the shaft for about 6 feet in length. We found a regular hurricane outside, but no drift. Levick and Browning have butchered three of the Emperors, and Campbell and Abbott have therefore been cooking under great difficulties, for the galley is full of meat and carcasses, and there is a bad backdraught down the chimney. We had a lot of Emperor penguin meat and blubber in the hoosh to-night. The meat has been a great success, but the blubber has made the gravy pure oil, and has beaten some of us, though I am thankful to say not myself. The Emperor blubber itself has a very delicate flavour. As a treat this morning Campbell gave us each a small strip of Emperor's breast done as a *filet-de-bœuf*, with a small piece of fat on top, and it was an excellent change after the unvarying stews we have had for months. I am reading my diary of last year in monthly parts for the amusement of the company. We all find an especial, though a tantalizing pleasure in the few descriptions of meals I have entered as part of our routine at Cape Adare. We still feel the monotonous diet, but are otherwise quite reconciled to our fate.

"The cave is keeping quite warm at present, and of course the insulation is much improved by each wind with drift. All the sea ice beyond the bay has gone out again, and the Drygalski Ice Tongue and the moraines are hidden by dense drift, which is just missing us except in the strongest gusts. Dickason and I were both blown down once or twice when we were standing at the entrance to the shaft."

The increase of warmth due to the improved insulation was not an unmixed blessing, for the air near the roof of the cave was warmed above freezing-point by the heat from the stoves, and the water from the roof commenced to drip over our bags. As the water fell it was cooled by the cold draught from the door, and we soon had quite respectable-sized icicles forming

on our gear and on the outside of our sleeping-bags. This was unpleasant, but was only a temporary inconvenience, for with an improved draught the hut was cooled. Of the two conditions we found that we much preferred the hut a little colder and without the drip. Later, when sewing had to be done, the temperature had to be regulated fairly carefully, but at present it did not matter much to any one but the messmen if it were several degrees below freezing-point.

After the first day or two of penguin blubber in the hoosh, the oily gravy disgusted everybody, and we were obliged to use the rest of the penguin fat to try out oil for the reading-lamps and for cooking, and confine ourselves to seal blubber as an article of diet. By this time most of us could stand a good deal of oil per meal, but we had very little use for hooshes which had no gravy at all but oil. Until the change was made we drank as much as we could manage and then poured the rest of the gravy of the first mug into the reading-lamps, where it burnt most excellently, and gave a light which was a decided improvement on that of seal oil.

An entry in my diary for the 9th of this month gives some idea of our occupations on an off day :—

“ We have had another quiet day in bed, and the wind still blows strongly. Campbell and Levick talk a good deal about future plans and about food, but I am content for the most part to lie and dream about past times, and not worry my head about the future. It is wonderful how contented we are simply with the physical comfort of warmth and rest, in spite of the absence of communication either with home or with the other parties. We occasionally talk of the possibility of relief by the ship's party in June or at the beginning of July, if she is ashore in Granite Harbour, or anywhere round there, but I should prefer above all things for the ship to have been driven north in February with

all hands on board. It is maddening to think of the possible loss of all our records and collections. Working in the hut goes much as usual, but the drip is becoming a nuisance. Dickason found an icicle 6 inches long in the head of his sleeping-bag to-day."

The small ration of meat was still hitting us very hard, and the chief trend of our thoughts now was always of food. To add to our troubles this month the biscuits in the new tin we had just started proved to be unusually small and also overbaked, and this bulked large in our minds as a grievance. It was unsafe to increase the ration, and yet we were getting distinctly less nourishment out of the biscuits than we had been in previous months. The slight loss of nourishment by the browning of the biscuits may seem trivial, and it is certainly unlikely that it was enough to have any physical effect, but its effect on us mentally may be gauged to some degree by the number and tone of the references to the fact in my diary. The crisp brown biscuits were also, as I have mentioned elsewhere, much too "easy" to eat. We could no longer make a single biscuit rise to the dignity of a meal, but economize as we might, and nibble as carefully as we might, still large pieces would break off at a time, and the biscuit had gone before we had really savoured it.

This was a great deprivation, and now every morning meal left behind it a feeling of injury, which was usually expressed by uncomplimentary remarks about the bakers who were responsible for the loss.

Our chocolate and sugar ration, meanwhile, was always satisfactory, and Saturday and Sunday were looked forward to for days. These little treats and the concerts which they made possible caused each week-end to be a bright spot in our calendar. No one who has only eaten chocolate at home can realize what the ounce and a half a week meant to us. Each separate piece which was bitten off was allowed to



dissolve slowly in the mouth so that its full savour should be appreciated, and then we would wait a few minutes before repeating the dose, so that no scrap of flavour should be lost. We invented various ways of eating both the chocolate and sugar. With great self-denial we would sometimes save a corner of a biscuit till the evening in order to eat it with our sugar, and when Levick produced ginger tabloids and tabloids of citric acid from our medicine-chest, we used to ring the changes also on preserved ginger (ginger and sugar) and lemonade (citric acid, sugar, and a little hot water).

Indeed, as soon as the citric acid tabloids were produced, our drink of hot reboiled tea on Mondays was almost completely done away with, and hot, sweet lemonade was substituted. The citric acid was the one thing that could thoroughly take away the taste of the blubber from the water, and it was the only clean-tasting drink we had. As I have said, it was impossible to see plainly either in the cave or in the passage outside, and so the ice which was melted for the tea and cocoa-water was frequently dirty with blubber, while lumps of seaweed from the floor also often found their way into the tea. These gave, to me at any rate, much the same feeling when they were swallowed unexpectedly as does the skin which forms on boiled milk and finds its way into one's coffee. There are few sensations so unpleasant as swallowing a mass of slimy seaweed when one is not prepared for it.

There is no doubt that half the pleasure we obtained from such little luxuries as biscuit, chocolate, sugar, citric acid, tabloids, etc., was due to the fact that they tasted "clean." All our seal hooshes had the same indeterminate taste, which suggested a mixture of meat, oil, and soot, and sometimes musty seaweed, as, indeed, they were. It was an exquisite pleasure to us always to eat anything which we knew was clean, and which had no taste of meat about it. This desire for flavouring



matter increased as time went on, and caused unending attempts to vary our diet. Seal meat has little taste at the best, and combined with oil and soot it becomes positively unpalatable.

While on half-rations we could eat and even enjoy it, but this did not make changes of flavour any the less desirable, and we ransacked all our resources to obtain them. Our main changes of diet were supplied from the seals and penguins themselves, although most of these had the disadvantage of still possessing a meaty taste. Adélie penguin's flesh was a constant ingredient of the morning hoosh, and made it always a thing to look forward to. Emperor flesh proved a welcome variant to both morning and evening hoosh for a month after we secured the four birds. Every three days the thought of an Oxo hoosh for breakfast waked us up a few minutes earlier than usual. Seal's liver, heart, and kidneys were used to flavour the Sunday hooshes, and were a great success, while we set aside the penguin livers and hearts for Midwinter Day. Thus it will be seen that both penguin and seal supply a certain number of changes if they are used judiciously, but the principal luxury we obtained from this source still remains to be named: seal's brain. In those two words you have the greatest success of the winter. It was Abbott's idea. Curiously enough Antarctic expeditions had never used the seal's brain as an article of diet before; at any rate, they have never recorded it as being used. On May 17th, following on a suggestion from Abbott that seal's brain ought to be as good as sheep's brain, I walked down to the icefoot and with my ice-axe I cut the top off the head of one of the butchered seals. I then chipped out the frozen brain with a chisel, collected the fragments in a tin, and carried them up to the cooks. They were then thrown into the hoosh as they were and allowed to heat up with it. The result was a revelation to us, and if I ever go South again I think

seal's brain will become a regular item in the menu. The soup it made was really the best we had yet tasted, and the pieces of brain themselves did not taste at all like meat, but, as Levick said, were much more like soaked bread. It might be urged against the use of the brains in future that our sense of taste was abnormal just now. So it certainly was, but we tried the brain a few months later, when we had been back amongst plenty for a month, and we found it equally palatable. For the rest of the winter, therefore, we had another luxury added to our store. Each brain was enough to flavour one hoosh, and as we had ten or twelve seals this meant a brain hoosh at least once a fortnight.

Having exhausted all the possibilities of the seal and penguin, we were obliged to range farther afield in the effort to vary our diet. The desire for fresh food and a different taste was even stronger I think than the desire for more food, and it was destined to remain with us all through the winter and until we once more resumed sledging rations. We had long ago attempted to use seaweed in our hooshes, but I cannot say that the experiment was a success. We had a standing promise from Levick that some day he would catch a bowlful of fresh seaweed, stew it, and eat it, and so taste its effect in large quantities, but from one reason or another this was never carried out. Our experiments, therefore, were made with the old dried seaweed from the beach, the same material which we were using to sleep on ; indeed, if a man felt unusually hungry he would reach his hand under the floorcloth, select a piece of the seaweed, and put it in his hoosh. I would never allow the inclusion of this prehistoric seaweed in the recognized ration, however, and so each man put into his hoosh-pot just as much as he felt he could manage. There was never much used by any one, and I for one could never enjoy it. It had lain, probably for a century or so, on the beach well above high-water mark, and

it must have been a regular highway for seals and penguins. Indeed, it tasted like essence of must and mildew, and reminded me of what I should expect a concentrated solution of Old Masters to taste like. If one were to strip the walls of the National Gallery, throw the canvases into a huge cauldron, and boil them for seven weeks, I fancy the resulting soup would have tasted very like Evans' Coves seaweed.

I have said that Levick's medicine-chest was also brought into requisition, and the citric acid tabloids were a great addition to our menu. The ginger tabloids were very nice dissolved in water and sweetened with sugar, when they went by the name of "ginger-beer," but they were lost in the hoosh, and our one attempt at flavouring the latter with them was by no means a success. There was no perceptible result, and for days we nursed the grievance of six ginger tabloids having been completely wasted. Levick next produced some lime-juice tabloids he had taken the previous year from Shackleton's hut at Cape Royds, and these also were an excellent change, but we soon decided that most of them must be kept for sledging as thirst quenchers.

Finally, he announced one day that he had some mustard-plasters with him, and the word "mustard" set our mouths watering at once. A few days later he was persuaded to serve out one to the cook, and the plaster was popped into the pot and well stirred up in the boiling hoosh. By this time we were thoroughly imbued with the spirit of economy, and the backing of the plaster was carefully fished out of the hoosh, dried, and set aside to light the fire in the morning. We then sat and waited with our mouths watering until the hoosh was served out, but the anticipation only made the result more disappointing. The mustard had not been enough to give the slightest flavouring to the stew, and all that was left was an all-pervading

taste of linseed. However, even this was a change from undiluted seal, so things might have been worse.

This about ends the list, as I remember it, of the official flavourings we used ; but the conditions under which the meals were prepared were very bad, and the murky twilight of the galley was responsible for numerous flavours we did not seek, so that if I cared to multiply horrors I could give a list of hooshes which were just as much epoch-making as those I have just described, though for a very opposite reason. As it was, from time to time, when something that was amusing as well as disgusting happened, I recorded it in my diary, and once or twice in the later pages of the narrative mention may be made of some unofficial flavouring which called down curses on the head of the messman at the time, but yet has added a very amusing incident to the memories that mark a crowded year. In spite of all the messman could do, however, on only one occasion do I remember a general return of hoosh to the pot, and I fancy that even then those returns were included in the next day's hoosh and consumed without audible objection. Our tactics in those days reminded some of us of past times, when the piece of fat left by a boy from one dinner duly made its appearance as the central figure in the next day's dish, with dire penalties attached if it were not eaten.

That questions of food filled a considerable part of both our waking and sleeping thoughts can be gathered from the constant recurrence in my diary of such remarks as the following : " We are still suffering from too little salt. This evening is our chocolate Wednesday, and this ration always throws an air of contentment over the whole party. We still think, talk, and dream about food a good deal. The new ration is evidently not sufficient." " It is a good job that we have not too much light, for everything, especi-

ally the floor in the kitchen, is so filthy that we should only feel more uncomfortable if we knew the full extent of the dirt. It is a wonder we do not develop some malignant disease. It is quite impossible to keep the blubber and smitch off everything, and even to keep our hands clean. The messman always gets his hands black several times a day, and it gives rise to very unpleasant reflections when he sees them gradually getting clean as he handles the meat he is cutting up for the hoosh."

In spite of all these food troubles, and the complete lack of exercise, the extraordinary thing was that we kept quite fit. We still find this quite difficult to explain, but I suppose the small meat diet must largely have accounted for it. It is certain that we could not have kept fit with as little exercise, and living in as foul an atmosphere, on an ordinary diet, and there seems no other reason that could possibly be the explanation of the general good condition of the party. On the rare occasions when we did get out we always felt fit for our heavy work of carrying stones over bad country, and the only exception to this rule was Browning. He had never conquered the dislike which his system had to sea water, and even when he went on to fresh-water hooshes the meat did not seem to agree with him at all well. His condition was already causing grave anxiety, and there is little doubt that but for Levick's unremitting care he would not have survived the winter.

One thing, too, which must have contributed more than anything else to pull him through was his unfailing cheerfulness. He was a tower of strength to the party in this way, for he had an unfailing fund of anecdote and repartee and was never at a loss for a good answer. Before he joined the Navy, he had been brought up on a farm in the West Country, and his tales of Devonshire life kept us all amused for hours



at a time. I think we all justified our existence during the long months of this winter, but Browning perhaps did so more than any of us.

It was soon after the middle of May that we really began to fear for the safety of our hut roof. Mysterious reports were heard from time to time from the interior of the snowdrift, and large cracks appeared running down and across the snow roof. What I feared most was that four normal faults would develop at right angles to one another and drop a large section of the roof on our heads. It was on May 22nd that these reports were most in evidence, and my diary for the day runs as follows :—

“Same old breeze, but swung rather to the southward, the change in direction being accompanied by a rise in temperature and an overcast day. Spent the day in bed except the messmen. I cannot say that I have had an enjoyable day, for the smitch has been intolerable all day and I have had two bad smitch eyes. The hoosh was all boiled to rags again. I am afraid the circulation of the outer four toes on my left foot is permanently injured, and also that of the foot connected with them, for either there is no feeling in them or they burn intolerably. Yesterday and to-day we have been disturbed by a constant succession of loud reports in the drift. These reports were quite common soon after we settled in, but they ceased for three weeks, and we are quite at a loss to account for the present fusillade. A brain hoosh again to-day, and the hoosh was excellently flavoured, but I am afraid all the nourishment was boiled out of it. It is curious how content we are to be in our bags day after day without exercise, and even without getting up at all for two or three days together. Yet we are all quite fit when we do go out.”

An entry on the 28th shows that improvements in our domestic economy were still going on. “Our latest





THE PASSAGE TO THE IGLOO, LOOKING OUTWARDS.



improvement domestically has been the substitution of the metal lining of the Fry's cocoa box for the meat-bag which I found to be smelling very badly. We are also taking more precautions that the meat chopped up each day shall be used up on the following day, and so are providing against the chance of pieces being overlooked for several days and thus allowed to go bad. It is very exasperating having to worry over the meat going bad in a climate like this, but it is very necessary. Campbell is rather ill to-day, but Browning seems improved. Otherwise we are all well and feel surprisingly fit when we do turn out to do a job of work, which, as will be seen from this journal, is very seldom. I suppose this low diet rather suits the lack of exercise, for we are a very cheerful and good-tempered party at present. Long may we continue so !”

On the 25th of May we had a rather unpleasant scare, and were as near to asphyxiation as I can wish to be. This incident also I will take from my diary as I wrote it at the time :—

“Westerly wind with heavy drift continues, and we have been drifted up all day. This afternoon we had to do away with the blubber fires because of the smitch, for the drift kept on filling the chimney and preventing the draught from flowing. Afterwards Dickason started the hoosh over the primus, and this rapidly used up our limited supply of oxygen. First of all the reading-lamps went out and refused to be lighted with a flaring spill, and then the spill went out and could not be relighted at the primus. Next the primus went out and could not be relighted because the matches would not burn. By this time we were opening up the chimney and the drift at the entrance to the shaft, and Campbell drove his ice-axe through the latter with immediate relief to everybody. Since then things have gone pretty well, but we all have had bad headaches, which we had

put down to the smitch, but which were more probably due directly to lack of oxygen. It is a great nuisance this new danger having arisen after we thought we had avoided the utmost malice of the weather, but it is lucky we were not caught at night and all asphyxiated in our beds. I suppose that the coating of ice which has formed on the inside of the snow-roof has spoiled the ventilation. After dinner Campbell and Abbot cleared the drift from the mouth of the shaft and pushed the flagstaff down the chimney."

In future this bamboo was always kept in the chimney, so that the latter could be cleared whenever the drift choked it up, and this added immensely to our safety during the next few weeks, but was not an unmixed blessing. The fires were gradually enlarging the lower entrance to the chimney, so that the penguin skin plug was no longer any use. We now had to use a large pemmican-bag, which was filled with bits of skin and seaweed, was very blubbery, and weighed about 20 lb. The messman for the day when the fires were put out had to wedge this mass of grease as far as he could reach up the chimney, and either hold it there until it froze in, or else wedge it up with a bamboo. Time after time the thing would fall in his face or into the fireplace, until he was exasperated with the whole business. Every night the struggle took place to the delight of the onlookers, a delight tempered by the thought that the next day or the day after their turn would come, and "placing the plug" has become for us the type of the truly Antarctic strenuous exercise. However, though unpleasant, it certainly did provide us with food for mirth at very regular intervals, and for every time we were the butt of the joke we had five laughs at other people, and it was in this proportion of one to five that the secret of most of the cheerfulness of the party lay. It was impossible

to laugh at your own troubles until a day or two later, but we made a point of laughing at every one else's, and each of us had long ago learned that to provide mirth for other people was the next best thing to enjoying the joke oneself.

## CHAPTER XXI

### THE DEPTHS OF WINTER

Levick's food experiment—Chorus songs more and more a factor in our life—The correlation of smell and sound—A pen-and-ink sketch of the party at hooshtime—Songs and memories—The sea ice still does not hold—Making bamboo carriers—The "Complex" stove—Our boots commence to fall to pieces—A dream—A week of my diary—Toothpicks and teeth—Controversies—Economies in oil consumption—Sealskin as well as blubber used in the fires.

OUR present straitened diet was not sufficiently ascetic for Levick, and towards the end of May he announced his intention of experimenting for a week on a diet of seal-meat alone, saving up all his biscuits, chocolates, and sugar for one glorious feed at the end of the week. This he had sufficient resolution to carry out, and the pity we had lavished on him during the week was changed to envy at the end of his self-imposed abstinence, and his enjoyment of the meals at the end of the experiment was almost enough (but not quite) to induce us to follow his example. Food-dreams were becoming more and more insistent as the winter slowly passed, and by now we all had a craving for special dishes. I recorded in my diary on May 28th that Campbell and Levick longed for tipsy-cake, and "I think my preference as regards puddings is the old-fashioned treacle-tart with breadcrumbs which we used to have at school." Since my return in consequence I find treacle-tart with breadcrumbs wherever I appear, and I should much like to know whether the others are also inundated



with tipsy-cakes. At any rate, now that I have betrayed their secret longings, they should never lack this article of diet in future.

Our stock of conversation had long since been threadbare, and the same old subjects would crop up again and again. As a consequence of this we resorted more and more to chorus songs to pass the time away, and here Browning and I, by reason of good memories and a talent for picking up the words of songs, flourished beyond every one else. As I have already stated, few of us possessed any voice or any idea of tune, I least of all, but my memory for songs is unimpeachable, and now on the days when Levick and I were messmen, I was expected to sing for at least two hours while the hoosh was being cooked. The chorus increased in confidence each day as the songs became better known, and as we used up our repertoire we racked our brains for new verses with so much success that the songs increased in length day by day, and one in particular to which all nursery rhymes and little catches can be sung numbered between thirty and forty verses. Had there been any passers-by to listen they might at any hour of the afternoon or evening have heard the party declaiming at the top of their voices such interesting facts as :—

Dr. Foster went to Gloucester in a shower of rain,

Shouting out the battle-cry of freedom.

He stepped in a puddle right up to his middle and never went there again,

Shouting out the battle-cry of freedom.

Some little time ago it was my privilege to read an article written by Mr. Rudyard Kipling for the *Geographical Magazine*, in which he describes the correlation of smells with certain phases of travel. I agree with him that there are certain distinctive smells which would always recall the Antarctic to my mind,

such as the smell of the spirit when the primus is lighted, and the smell of hot grease poured on a fire, but to me scent and sound are more intimately connected than scent and place. When I was out in the Welsh hills with the Sedgwick Club last April and we sang over again many of the old songs we had sung in the "igloo," the two old favourites, "The Battle-cry of Freedom" and "Old King Cole," brought back to me most vividly of all, the appetizing smell of a well-cooked hoosh, and I felt positively homesick for our old quarters. I had only to close my eyes and I could cast my thoughts back two years and see again the black, blubber and soot-covered cave, with the gleaming white of the ice and snow showing where the walls were washed by the thaw near the fire. From amid the smoke which rises in volumes from a cheery blubber fire the blackened oven looms dimly, its squat body supported by bamboo uprights which look like very thin spindle-shanked legs and from which are slung penguins, a seal's head, and huge joints of red meat, for all the world like the stage joints of meat one sees in a pantomime. Levick crouches near the fire and stirs the hoosh with the thin bamboo stirrer, and as he swirls it round and round a most appetizing smell arises. Close beside him am I, sitting on my heels, my hands so numb with the cold draught from the door that it is difficult to tell whether I am cutting the meat or my own fingers, a fact which is attested by several cuts which will not stop bleeding until I can warm my hands on the first mug of hoosh an hour or so later. Such little things do not worry us now, however; the blood will only serve to make to-morrow's hoosh more nourishing, and it is only if the cut is extra bad that a bandage is requisitioned. As we sit and tend the fire or slice up the meat, not much conversation takes place. In the background lie the other four men, their sleeping-bags in the dim light giving them the appearance of



MODEL OF THE INTERIOR OF THE SNOW CAVE ON INEXPRESSIBLE ISLAND.

By Lady Scott, after a sketch by Commander Campbell.



four huge and hairy caterpillars, and from one of these bags sooner or later comes the request for a song with a chorus. Usually I oblige first with a "chanty," and the chorus is almost enough to bring down the roof. Then comes Levick's great song, "Old King Cole," and this is taken in fast time, the idea being to make somebody go wrong with the chorus, but we know it so well now that it is seldom that any one is "lurked," and even the last verse goes correctly from "'What's the next word of command?' says the Colonel," past the sage remarks of Major, Captain, Adjutant, subaltern, sergeant, and drummer, to the final "'Weedle, weedle wee,' says the piper, 'very merry men are we,'" etc. "Who killed Cock Robin?" follows, and then the "Battle-cry of Freedom," and finally, if the fires have been going well, Levick may be persuaded to sing his own composition, a topical song about the blubber hoosh and the "oven," which commemorates a memorable occasion when one of our few accidents occurred, and—

The whole of the oven came tumbling upon my poor innocent head,  
At the sound of that avalanche rumbling the customers wished they  
were dead,  
They'd hungrily watched the hoosh cooking, and just when they  
thought it was hot,  
With a hoop-la! hoop-la! down came the whole jolly lot.

We lost a pint of hoosh the day this happened, but, as usual, the misfortune has been forgotten and the ludicrous side of the accident has survived.

Such memories as this recalled by the verse of a song are unsettling, for they intensify the desire to return and try one's luck again under similar conditions. Each song has its own memories, from the chanties which speak of the clank of pumps and the rattle of blocks to a certain hymn which, when sung in the Antarctic, recalled too vividly to my mind a vision

of a certain oak-panelled drawing-room in a little town in Gloucestershire.

An entry in my diary on the last day of the month shows that we were beginning to realize the possibility that we should not be able to leave here until it was light enough to sledge over the Drygalski Glacier.

The sea ice steadily refused to stay in against the constant wind, and I wrote on May 31st: "Sea clear of ice outside the coves. We shall soon be on the move now even if we are not relieved until July. We are really beginning to be afraid whether the wind here is not continuous and whether we may not find this to be a corner like Cape Crozier, where the ice very seldom sets in for any length of time." It was clear to us that if this were so we should be delayed here until September, for we should have some 20 miles of unknown glacier to cross and must have reasonable light and temperatures to do so.

This day showed a scene of industry unusual in the cave, for Browning and Dickason were busy working on three bamboo carriers made by securing together a rectangle of bamboos with twine, and attaching shoulder-straps made either from the canvas slings we had made at Cape Adare or from some of our spare putties. We found these very useful for packing material from our various depôts, and each of us was to have one for the trip to Cape Evans in case we had to abandon the sledge. Levick meanwhile was working out a new type of stove, which was made, like those at present in use, from an oil-can, and I was mending my windproof trousers—which, alas! were no longer windproof or anything like it. They were better described in those days as "calmproof," for when there was no breeze they themselves were capable of creating a draught. They were, like all our other clothes, rotten with blubber and they tore whenever they caught against anything.



June came in with the same cheery wind, but a bright moon was an improvement on the late darkness. The "Complex" stove, as Levick had named his new toy, behaved excellently on its first day of trial, and the fire from it was very cheery as the flames lapped right round the pot. Altogether, we were now able to arrange our meals with some degree of punctuality, as each fireman was beginning to master the fires instead of being, as formerly, the slave of their caprices. The chief innovation in the "Complex" stove was a series of holes bored along the sides of the can in order to give the air free access to the fire. This was an excellent idea, but unfortunately the holes were bored too low and the triumph of the inventor of the stove was not long-lived.

We returned from our work outside a few days later to find a battered and trampled tin lying in the passage leading to the cave. On examination this proved to be the "Complex," and inquiry elicited the fact that the stove had smoked terribly all day and given the cook and messman "four smitch eyes." It had then been formally excommunicated and thrown out, and the hoosh had been cooked over the old "Simplex" stove. Its inventor was not quite satisfied with this trial, fearing prejudice on the part of the other firm, but the next day the ungrateful stove incapacitated him also, so that he could only sit and hold on to his eyes while I stoked the fire, and so the "Complex" disappeared finally from our midst to take up an appropriate place on the rubbish-heap. There was much triumph amongst the conservatives that day, but there is little doubt that the principle of the new stove was all right, though the execution was faulty.

Except in the moonlight, it was now too dark during the whole twenty-four hours for us to carry heavy loads with any comfort over the huge boulders between us and the shore, and we were compelled to take

advantage of the few clear moonlight days whether the weather otherwise was favourable or not. One would have thought then that the wind was a sentient thing with a positive dislike to human beings, for no sooner was the moon due than the temperature of the wind seemed to drop and its force to increase. Many a bad hour did these enforced excursions for food give us, but there was no help for it.

The food had to be fetched, and there was no one else to fetch it. Our clothes were in rags, and our only pairs of leather boots were falling to pieces on our feet, but, whenever the messman declared the light to be good enough, a working party had to be out storing food near the cave in readiness for the next dark spell. Our boots, especially, were no protection to our feet, and the temperature was so low that they froze stiff directly we got beyond the drift. The wind peeped in through every crack, and seared toe, heel, and instep, and the frozen boots chafed the skin from off our heels, so that mine, at any rate, were never free from scars. It was these things that first showed us that we were growing more and more callous to discomfort, for "we never notice such things as flayed heels and frost-bitten fingers except in our leisure moments."

On June 6th I had what was perhaps the most vivid dream of the winter, and it was such an extraordinary jumble and founded so directly on our thoughts and conversations down here that I recorded it in my diary for the day :—

"I was in a small cruiser anchored off a place which was labelled Malta in large letters, but which was a small rock in the middle of the cricket-field at Tewkesbury. Campbell, who was in charge of the ship, was explaining that the ox which was tied to our mooring-rope had been sent by the Maltese, and that we were to have one each every day. A sailor came up and asked to speak to Campbell, and told him that

Peggotty was a lazy beggar and that he, the complainant, had had to keep eight hours' night-watch instead of four. Just then we noticed three of our sailors standing in a knot by the gate of the cricket-field waving their hands to attract our attention, and Campbell at once took his glasses and went towards them. I stayed just long enough to tell the man with the grievance that he had better clear out because Peggotty had not gone to Australia but was at Yarmouth, and I would let him know of the complaint. I then went to join Campbell, and saw him looking towards the corner of the field and shaking his fist at the sky. When I took the glasses I saw that the *Terra Nova* was a total wreck, with her back broken on the spiked railings there and with only one mast standing, while a cab was just removing the last of the crew. We followed the cab and came to a large liner on the Swilgate Brook, on the deck of which were a number of passengers from the wreck, some of whom I knew. Directly I had greeted them and had explained who Campbell was, they ran to him and asked him to go and look at the dead in the deck-house. He went, and I was explaining how we were wintering at Evans' Coves when I woke up."

This account may not seem relevant to the narrative of the winter, but these vivid dreams were a distinct feature of our life, so much so that we may be said to have had two separate existences in these months, and the dream is also interesting as showing the two main features still running through it—the desire for food and the doubt of the fate of the *Terra Nova*. For the rest it shows the effects of our recent conversations about the Navy and discipline, and the readings from Dickens, grafted on to the scenes amongst which my earlier life was passed.

The weather during June was, if possible, worse than any other month we had yet experienced, but it

seemed powerless to affect our spirits, which rose steadily as Midwinter Day approached. Our domestic routine was now so improved that after what we had been through it seemed perfect. Every one was able to look forward to his day on as messman or cook without dread, and the evenings, cheerful as they were, were no longer the only bright spots in our existence. Perhaps a better idea of our life can be gained if I quote from the next four or five days of my diary instead of casting the account into narrative form :—

*June 11, 1912.*—Clear, but westerly breeze this morning. Overcast this afternoon. All in bed but Abbott, who spent half an hour clearing the snow out of the shaft. Hooshes to-day have been excellent in spite of a decided tang of penguin guano. I am afraid I made rather too good a job of the bird yesterday in my desire to be economical. Campbell, 'Abbott, and Browning have another bad attack of the usual disorder. Browning seems to be getting the better of the salt water, a thing of which we are very glad, for things are peculiarly bad for him while this trouble lasts, and even his sanguine temperament is not always proof against the consequent depression.

We have had the clearest day on record to-day, and I have been reading some of my letters for the fourth or fifth time. It is very useful having them to pass away some of the time. To-night I am serving out four lumps of extra sugar and we get our four citric-acid tabloids, so we are looking forward to a better drink than the reboiled tea usually affords. Certainly the taste of the tea will not be strong enough to affect the flavour of lemon.

*June 12, 1912.*—Westerly breeze of medium strength. Overcast with fairly high indefinite cloud. Slight arch aurora to W. and N. Sea open and black as far as we can see in the present imperfect light. As our sea

ice and penguin supply is getting low we decided to brave the weather, and so Browning and Dickason ran up a couple of loads of sea ice and Levick and I fetched ten penguins from the far depôt. The difficulty of our trips in the dark is that we have to walk with our legs stiff and our feet on the ground feeling for inequalities of surface, and in spite of all precautions we fell several times before we reached the depôt, and were proportionately annoyed. The wind was very galling, but not so cold as usual.

After I returned I passed in some penguins to Campbell to thaw out over the fire, and then Browning and I went to the largest of the dead seals to obtain a supply of bones. We have all perspired a good deal during the unwonted exercise, and are feeling more hungry than usual if possible. I believe we are getting hungrier every day. Either the smitch or the smoking of tea-leaves and wood-chips has induced in us a slight affection of the bronchial tubes, which causes wheezy breathing and huskiness of voice. We are all affected more or less, and it is very weird to listen to this unmelodious concert when lying awake in the darkness after the lamps have been put out at night. A more utter darkness it would be impossible to imagine. From the fact that I am the least affected I should be inclined to put the epidemic down to smoking.

*June 13, 1912.*—Westerly breeze still blowing Clear. Levick and I messmen and a successful day. Fingers very cold. Short diary.

*June 14, 1912.*—Half a gale blowing. Clear, and stars shining. Another day in bed. Rather smitchier than usual. We have just had a word who should go out and clear the chimney and cut away a projecting piece of sealskin in our passage roof which is a constant menace to our eyes and noses, and which has perhaps been the cause of more hasty language than any other individual thing about the camp. I have not



yet mentioned one essential portion of our equipment—the toothpick. Campbell is the only member of the party who still possesses a toothbrush, and the present diet is eminently suited to cause the collection of small shreds of meat between our teeth. In spite of this we are able to keep them in as good condition as we can at home by the judicious use of bamboo toothpicks with sharp points to remove the meat and of pieces of soft wood to rub the front of the teeth. These latter instruments are made from the white wood of the Fry's chocolate boxes, and their blunt chisel ends are moistened and chewed first to secure pliability. They are rather better than a toothbrush. The hard biscuit, of course, looks after the grinding surfaces for us. I think at present that I am looking forward to a good bath and a clean up as much as I am to a good meal of bread, butter, and jam, which is saying a good deal. Another tin of oil was finished this morning. We have every reason to be satisfied with the oil consumption, which is becoming less and less, while Dickason watches over his primus like a hen over her chickens. The men are just finishing off their private sewing, and then they start work on their tents. The day after one has been messman is always the pleasantest of the three, for one feels one has earned the right to a day in bed.

To-day has been a great day of controversies. First Levick and myself found ourselves at variance about the chocolate ration, and the amount of chocolate left at Cape Adare. The second argument was whether or not one of the expedition fruit-cakes would freeze at spring sledging temperatures, and this was followed by two lengthy battles between Campbell and Levick on points of national ethics and imperial politics respectively. Finally we had a three-cornered battle as to which is the most economical and soul-satisfying way of eating one's single biscuit. We are all three set in our own way: Campbell eats his at breakfast, Levick



part at breakfast and part in each hoosh, and myself part when I feel the want of it, about midday or a little earlier, and part at dinner.

*June 15, 1912.*—Slight W.S.W. wind. Thickly overcast. Another day in bed as the weather is unpleasantly dark, and we are provisioned for 8 or 10 days.

*June 16, 1912.*—S.W. gale back with us again. Wind of hurricane force during the night, but eased to nine or ten before this evening. Clear but for banks of clouds to the south. All spent the day in bed, Levick and I have had another successful day as messmen, and are beginning to deserve Levick's name of "The Marriage Bell Co."

Our latest two improvements are with regard to oil. We have been using as a reservoir for lamp-oil the inverted upper portion of an oil-tin, the residue left from one of our "Simplex" lamps. This was very inconvenient as the handle and bung prevented it from standing upright. Capsizes were frequent. The last empty oil-tin has therefore been turned to account, and the top of it cut off just about half an inch down the side. The whole tin thus left makes an excellent reservoir, while the lid can be adjusted to keep out the dirt.

The second improvement was a suggestion of my own as a direct result of 'Abbott's upsetting and wasting the oil of one of our reading-lamps. He did it out of doors, and this accident has been quite common lately, as it is not easy to crawl on hands and knees down the passage and carry a lamp at the same time. We have therefore made a new lamp for use in the passage, and this is three-quarters filled with blubber and refuse, so that the loss of oil in future will be very little.

We missed our concert last night, but had a pleasant talk about sledging arrangements for the spring. Time still passes quickly: this week will see Midwinter Day over, and after that there are three or four birthdays to mark the flight of time.

*June 17, 1912.*—Slight westerly wind. Overcast and thick with falling snow, which the wind is driving slowly. Yesterday Levick kept our fire going for several hours by simply using strips of roughly flensed skin, 2 inches by 9 inches, with the hair and just the back of the skin pared off with a knife. It burnt splendidly, and the new method is a distinct acquisition from the point of view of economy.

Last night we had our usual Sunday readings, this time the 11th Chapter of the Acts, my diary of the Crescent Bay trip, and the early manhood of Stevenson, all three unusually interesting chapters. The concert was, as usual, a great success, and we again got through the *Te Deum* without a hitch. Altogether we have a good selection of hymns, and our evening last night was quite a late one. This is always a good thing nowadays, as none of us sleep too well. We generally feel slightly sleepy after the evening hoosh, wake up during the evening, and fall asleep again in the early morning, waking again about 6 a.m. or 7 a.m., at which latter hour we get up. We then take out the rest of our sleep between 9 a.m. and 11 a.m. The morning sleep helps the time to pass, and for my part I find it equally hard to sleep at night whether I sleep in the daytime or not. During the days in the bag we have little we can do, for we dare not read much. The smitch from the fires inflames our eyes, and the lids press so hard on the eyeballs that they cause acute pain. We are quite self-contained now, and have sufficient of all stores under shelter to last us through any bad wind of ordinary duration. The only reasons for trips outside in bad weather now are the shooting of each day's rubbish on the heap outside the door and an occasional inspection and repairing of the chimney. The windward block of this latter frequently gets removed by the wind, leaving the leeward blocks standing up and thus causing a downward draught and much smitch.

Apart from these two things it is now never necessary for the messman to go beyond the shelter of the shaft, which is itself so snug that yesterday during the gale the flame of the lamp, held just below the entrance when the chimney had been plugged for the night, never even fluttered.

The above description of a week's life in the cave is a fair sample of my diary, for these uneventful months in the middle of the winter, and should give a fair idea of our existence and the way difficulties were gradually overcome. The optimism which had followed on the period of depression that gripped the party at the end of February never wavered during the winter, but gradually increased until it became our mainstay, and as one difficulty after another disappeared we became more and more convinced that we were going to pull through, and this although we had at this time only enough seal to keep us going on half-rations until the end of July.

## CHAPTER XXII

### OUR SECOND MIDWINTER

Midwinter Day ration—The day a greater success than last year—An accident—A sailor's yarn—Hunger pangs—The Browning wash and other washes—Salted blubber not a success—Another ventilation scare—A night watch—The "igloo back"—A day's work outside—More seals—Abbott severs the tendons of three fingers—More seals yet—Birthdays—The coldest wind to date—More trouble with our boots.

"NEXT Saturday is Midwinter Day, the end of the long wait without a break, and the first day for four months when we shall go to bed with our hunger satisfied. We have thought of little else for the last fortnight. Thus easily can a man's most intimate desires become centred round a satisfying meal. We seldom look beyond physical comfort as the summit of our ambition.

"I am serving out four biscuits (half sledging ration), four sticks of chocolate, twenty raisins, and fourteen lumps of sugar per man, increasing both hooshes to three-quarter ration, and we are having full ration of cocoa as in the hut, with four lumps of sugar per man in the cocoa. Our one bottle of Wincarnis will give a good tot each, and we ought to turn in well satisfied with the world. The extra biscuits may help to palliate the fact that we are going permanently on to one biscuit a day the following day."

Thus runs my diary on June 18th. Another year had slipped away and a second Midwinter Day





BORCHGREVINK'S HUT USED AS A WORKROOM DURING OUR FIRST WINTER  
AT CAPE ADARE.



WEDDELL SEALS ON THE ICEFOOT AT INEXPRESSIBLE ISLAND.



approached us quickly. Nothing could be in greater contrast than these two anniversaries. At Cape Adare last year we were clean, well fed, and well clothed, and in the evening we sat down to a dinner that would not have disgraced a London restaurant. We were living in a spacious, well-lighted, and well-ventilated hut, and the weather outside was calm and clear. Now let us look at our present position. The same six men were about to celebrate the same anniversary, but here the resemblance ceased. Dirty, unwashed, and unkempt, no one who was not in the know would have recognized us as the comparatively spruce people who figure in the photograph taken at dinner on June 22, 1911. Our abode was a cave in which it was impossible to stand upright, our sleeping-bags were greasy and in many cases were wearing bare of hair, two of us spent the day toiling over blubber fire and meat-board, while the other four lay supine in their bags. Our morning meal and evening meal alike were hooshes at which any English tramp would have turned up his nose, and as treats we had four hard biscuits, three pennyworth of chocolate, and a few lumps of sugar. Yet had any of us been asked on the night of June 22, 1912, which day we had enjoyed the most there would have been no hesitation about our answers—1912 every time. The value of these treats lies wholly in the contrast they afford to our daily life. Petronius never had so much pleasure from a Roman feast as we had from our hooshes, flavoured as they were with the carefully saved livers and hearts of Adélie penguins, and from our few luxuries. As for the *Wincarnis*, none of the famous wines of the world could possibly taste to us as did this, our first decent drink since February. It was sipped, it is true, out of horn mugs which were so impregnated with blubber that they had to be scraped with the blade of a knife before they were sufficiently clean for its reception;

but even this could not ruin the taste of the wine, and the soupçon of blubber may have added body to its flavour. Perhaps my ideas of this portion of the treat may be exaggerated, for on the longed-for day a tragedy happened. The wine had been served out to all hands and I had resumed my work of chopping up the meat, when an unconsidered movement of the elbow upset the mug containing my tot, and a libation was poured over my sleeping-bag. The amount saved was well within the limits of a tablespoonful, and the loss in bulk may have been partly counterbalanced by a gain in appreciation.

When the longed-for day arrived it proved in every way to be up to our expectation, and the glow it left behind lasted, as I have said, for a week or more. Once more we experienced the pleasure of holding a morsel of food in our hands and being able to say honestly that we could not eat it. All hands were beaten by the ration served out, and every one had a little left over the next morning, when we once more went back to a subnormal allowance. My diary for June 22nd shows my own appreciation of the treat, and I have no doubt that the tone of those kept by the others was of the same order :—

“Levick and I have just finished an excellent day as messmen. The hoosh, flavoured with seal’s brain and penguin’s liver, was sublime, the Wincarnis tasted strongly of muscatel grape, and the sweet cocoa was the best drink I have had for nine months. The only accident of the day was when I upset my Wincarnis, but we had so much else that I did not miss it much. The smokers are having a cigar and a sixth of a plug each, and we are looking forward to a long and cheerful evening. Since we started to serve out the hoosh the igloo has resounded with chorus after chorus, and they have all gone splendidly. Levick and I are looking forward to a good supper, as we have not





A SLEDGING CAMP.



THE SEA THAT WOULD NOT FREEZE.

To face p. 311.

touched our chocolate, sugar, and biscuit, while most of the others are nearly through theirs. We really have had a much more enjoyable day even than last Midwinter Day, and it is comforting to think that every day now the sun will come nearer and nearer to us until on August 10th he will be above our theoretical horizon, though owing to the foothills to the north of us we shall not see him until the 15th or later.

"It has been blowing all day. The moon is already quite high and gives a good light in spite of the slight haze and snow. There was a good deal of drift in the shaft this morning.

"We are all feeling fit and looking forward to a little exercise during the present moon. We shall very soon have to fetch some more stores up. The blubber is not lasting as well as we hoped, but the meat is rather better.

"Browning told us a tale worth recording this morning. A sailor was sitting in the pit at a theatre, and just in front of him was a man with a high top-hat which much impeded the mariner's view of the piece. At last his patience gave way, and in one of the intervals he brought his fist down on the top-hat, driving it over its owner's eyes, and saying—

"‘Down funnel, up screw!’

"The recipient of the blow calmly removed the wreck, turned round, and, hitting the sailor between the eyes, said: ‘Out lights! Clear off the messdeck for rounds! I’ve been in the Navy myself!’

"I have seen to-day what I never expected to see—open water at 75° S. latitude on a Midwinter Day."

The only untoward effect of the feast described above was the general fillip given to our digestive systems, and a consequent increase of hunger, which was very inconvenient and very painful. The gnawing pain before our meals was now still more pronounced, and we did not feel reasonably full even after the meal.

These hunger pangs also began to interfere with our concerts just about now, for the singing acted in much the same way as our occasional exercises.

It was about Midwinter Day also that we had our first approach to a wash. It was of course out of the question for us to spare any of our very scanty store of blubber to melt water for washing purposes, and so none of us had had a real wash since we passed the last pool of water on our summer trip.

One day, however, when Browning had just crawled into the cave from the shaft, some one noticed that his helmet was covered with snow from the hoarfrost on the roof of the passage. When this was pointed out to him he drew the helmet off and dried it on his face, and this primitive wash proved so refreshing that we all copied it forthwith. It did not remove an appreciable amount of blubber, and, indeed, if it had I doubt if it would have been a wise thing, for an oily face seems less liable to frost-bite than a clean one. This washdown was named by common consent the "Browning wash," and it ranks with others I have heard of: for instance, the "privatesman's wash"—two fingers dipped in a bucket of water and wiped across each eye—and the "seaman-gunner's wash"—a general swab down of the face with the lather of a shaving-brush. A spring-sledging wash might be defined as a look at a snowdrift and a shiver.

We were now getting towards the end of our store of meat and all the small joints had been exhausted. This meant working on the large, long joints, each of which was about a quarter the size of a seal, and these pieces proved to be very difficult to thaw out. We finally found ourselves obliged to prop the one we were working on as near the fire as possible, and each messman first of all cut off all he could from the side nearest the flames, and then set to work on the main joint with hammer and chisel. In this way we managed



to deal with them fairly successfully, and there was certainly very little meat on the bones when they were thrown out on to the bone depôt outside the mouth of the shaft.

One trouble, which began now to appear for the first time, was the gradual development of a distaste for seal meat. Some of us had never found seal to be very pleasant tasting ; indeed, at the best of times it is rather tasteless. Now that we were working on the odds and the ends of the meat we began to find it unpalatable, in spite of our hunger, and this feeling was rather intensified by the fact that just at this time we were working on a young sealskin of which the blubber was very rank. The skin had also been well soaked in salt water, and the two things in combination made the blubber almost uneatable. It tasted strong, it was as tough as indiarubber, it was extremely salt, and was also of little use from the fireman's point of view. Fortunately, it was only this one skin that was affected, for I believe that a prolonged course of it would have quite put us off our meals. As it was it managed to produce a general attack of indigestion.

Perhaps it was through a desire to change the flavour of the hoosh at any cost, and not as he pleaded through absent-mindedness, that Abbott about this time distinguished himself by serving up a penguin's flipper, feathers and all, in the hoosh. He had been using the flipper to scrape out the inside of the pot, and incidentally he also served up the scrapings. The two additions did not improve the flavour of the hoosh, but we were too hungry to be put off with trifles like that and there were very few returns.

On July 5th we had another ventilation scare. We had heard no wind at all during the night, but a few minutes after the primus had been set going in the morning the air became so vitiated that the lamps would not burn, and on examination we found both chimney

and shaft blocked. As before, this was the result of a south-east breeze with heavy snow, and the draught did not become normal until the westerly breeze returned. It was the first time that we had had reason to do anything but curse the latter ; but to do it justice it certainly did make the hut liveable again. Owing to the varying direction of this wind we were obliged to go out several times to trim the chimney so that the opening was to leeward, for we found that a horizontal opening was little good. The southerly wind was unusually warm that morning, and Campbell and I spent some time walking and standing about outside, discussing the situation in general and congratulating ourselves on the way the winter had passed. This is worthy of record, as it was about the first time that any of us had been able to take a walk outside in comparative comfort, and certainly it was the first time we had been able to stand about without danger of being frost-bitten. There was about 2 feet of soft snow on the drift, and this caused us to sweat profusely when we walked. We therefore stood still for half an hour, and even then felt uncomfortably warm. The weather was so thick that Look-out Hill, the point to the north of the coves, was not visible from the mouth of the cave.

Towards the evening the wind again swung round to the S.E., and as we had arranged the chimney for a westerly wind the drift came down in clouds, the draught was reversed, and the hut again filled with smitch. As it was impossible to expect the hoosh to boil with 2 inches of snow on the lid of the pot, the stove was put aside, the chimney closed, and the primus requisitioned. The primus quickly used up our supply of oxygen, but we kept a two-hourly watch all through the night, every man clearing the hatch once in his two hours, and so we did not have a recurrence of the morning scare. My night watch was from midnight

to 2 a.m., and the duties were light. I sat and yarned with Campbell and Levick till 1 a.m., and then paid my visit to the shaft. After crawling to the end of the passage I cleared away the snow from the entrance, and also cleared the chimney, taking out the plug and allowing the draught to play freely through the hut for five or ten minutes. I then cleaned myself as well as I could, turned in again, and lay talking to Campbell until his watch began at 2 a.m.

The next day the wind and snow continued, and the chimney was snowed up to its top. We were therefore obliged to prolong it with a funnel of sealskin, and the hoosh was two hours late owing to the imperfect draught and the very perfect smitch. Towards evening we were all beginning to feel like well-cured herrings. This ventilation question added much to our discomforts and anxieties, and the little sealskin chimney and the mast projecting through it presented a very peculiar appearance from the outside. They were by now the only objects showing above the unbroken white of the snowdrift surface, and seen through the thick flying snow reminded one strongly of Kipling's description of the *Bolivar* crossing the bay—"just a funnel and a mast lurching through the spray."

It was on this day that I recorded for the first time the prevalence of the "igloo back." As I have already mentioned, the height of our snow-cave was only 5 feet 6 inches, and we were never able to stand upright when working at indoor duties. When, as at present, we were confined to our home for days together, this and other effects of our cramped quarters soon made themselves felt. The following extract from my diary of July 6th mentions this new trouble and also throws light on some of the other anxieties of this portion of the winter :—

"The worst of our day as messman is the infernal crick we get in our backs from never being able to

stand upright. Mine is at present aching terribly, but the pain soon passes off in our bags.

"Levick is too broad for our inner door, and we have just spent an amusing five minutes watching his attempts to get through with a joint of meat in one hand and a cooker in the other. Luckily, as a rule we run to slimness, and no one else has much trouble.

"The atmosphere is becoming tolerable again, but we have ruined the pure white of the roof and wall until a few more smitchless days enable pure crystals to form over the dirty ones.

"Browning has slight indigestion and Dickason has complained of a bad stitch in his side, but otherwise we are in excellent health.

"We are running out of penguins and of bones for the fire, and shall be short of sea ice in a day or two, so I hope for fine weather, for the penguins especially make all the difference between palatable and monotonous hoosh."

In view of this shortage of stores it was very fortunate that the bad weather broke the next day, and we had the finest day we had yet had during the winter. For the seven hours of the working day the weather was calm, and there was only a very small amount of snow. We had a good day's work in consequence, and added to our stores twenty-three penguins, ten pieces of blubber, and three loads of sea ice, besides a good supply of bones. These were all stowed in the alcoves at the side of the shaft, and then we refixed the chimney, which had been taken inside that morning for repairs.

The next day was a red-letter day for us, but Levick and I, being messmen, missed the fun. Campbell and Abbott were down digging out four shields of blubber which had been frozen in by the ice from the spring tides, and as Campbell's feet grew cold he went for a walk along the icefoot. He quickly returned with the news that there were two seals on the ice, and





FOOD AND FUEL FOR A FORTNIGHT.



A BLIZZARD ICEFOOT OF FROZEN SPRAY.



they both came up to the cave to fetch their knives and an ice-axe and then went to butcher the animals. The rest of the account I take from their description : "On arriving at the place they found two seals up, and Abbott started to stun one with a short ice-axe, which was unfortunately the only weapon they had. He could not get in a good blow, but struck the seal in the back of the neck, and the animal at once made for the water. If we lost these two animals, the chances were very great that we should not finish the winter alive, and so Abbott leaped on the seal's back and by frantic efforts succeeded in stopping and stunning the beast in time.

"He stabbed it to the heart with his knife with the spunyarn binding on the handle, handed the knife to Campbell, and took the ice-axe to the other seal. This one was more pugnacious, and went for him. He had another fight and another ride, but again managed to get in his blow. He then held out his hand for the knife, and Campbell, unfortunately, handed him Browning's knife, which he was also holding and which had a blunt edge and a slippery, blubbery handle. Abbott gave a stab at the seal with this, and the knife ran up through his hand and tore three deep gashes across his fingers."

He at once came up to Levick to be bandaged, and arrived at the cave with his mit full of blood and feeling very faint. Levick, however, promptly bandaged him up, and he turned in and was soon feeling fairly fit again. Unfortunately, the knife had severed the tendons of all three fingers, and all power of bending them was permanently lost.

Browning and Dickason then went down to join Campbell, and the three of them skinned and butchered the seals. They were a great addition to our larder, for the blubber on their skins was thicker than any we had yet had and proved to be very well

flavoured. One of the seals gave Browning a good deal of trouble, for although stunned and stabbed he rolled over and over until he had gone twenty yards towards the sea, and he took a good deal of stopping. We had no room for sentiment about them, however, for we were running short of both meat and blubber and could not afford to cut the ration any more. I was so pleased with the addition to our larder, indeed, that I served out a couple of handfuls of extra meat in the hoosh and six lumps of sugar per man.

The next day the weather was not too pleasant, but four of us turned out and removed as much as possible of the meat and blubber to the drift, where it was handy in case of a renewal of bad weather. After each day's work outside we were always cold in our bags, and this, I suppose, was due to the general chilling of our clothes, which took some time to warm up, and to the slight perspiration which damped everything. On July 12th Browning and Dickason turned out and again searched the icefoot for seals. They were lucky, and secured two more, and we were now sure of lasting out until the beginning of September at least. It was very pleasant working outside at noon on this day, quite warm and fairly light in spite of the snow, and it was especially pleasant to feel that in future the days would always be getting lighter.

Thanks to the recent fall of snow, the entrance to our shaft was now so high as to be almost inaccessible. On the 13th, therefore, Dickason was told off to prepare a series of steps which would enable us to climb up and down without difficulty, and he made a decided success of his job, crowning each of four steps with a flat stone. The next and last improvement in our snow-drift home was the change in the entrance. Until now we had had the entrance flush with the surface of the drift, but now we made a framework of three bamboos, bound together with spunyarn, and erected this vertically

at the entrance. From this frame two long bamboos sloped gradually backwards till they met the roof of the passage, and these served as a support for a roof made from sealskin and snow, while a wall of snow-blocks was built up to make the back of this new hatch windproof and driftproof. When the entrance was closed with a sack suspended from a bamboo frame, this raised torpedo-hatch worked splendidly, and we never had drift in the passage again.

Abbott was still under doctor's orders these days, and was forbidden all work, so that his mess duties were divided amongst the rest of us. His fingers gradually improved, however, for Levick bandaged them each night, and it is worth recording that the old bandages were saved, soaked in blubber, and used for lighting the fires in the morning—another instance of economy.

July 20th, being my birthday, was celebrated with an extra feed and a concert in the evening. I served out another stick of chocolate, six lumps of sugar, and twenty-five raisins per man, and once again we turned in very well satisfied with ourselves and looking forward to the next anniversary. As the birthday fell on my messday, Campbell, Levick, and Browning took over my duties, and I spent the day luxuriously in my bag, sleeping, reading, and talking. At noon this day there was a perfectly glorious sky to the north, and it was plain that our dark days were over.

July 21st was marked by what was perhaps the coldest wind yet. I was encouraged by the slightness of the breeze to go out and try to fetch up some bones, but it was blowing a gale at the icefoot and the cold was withering. I don't know how many degrees of frost there were, but I felt as if I had no underclothes on at all, and in three minutes I had three body frost-bites and hurried back as fast as I could against the wind in time to stop the others going down. They were up and dressed, and so they determined to take

some exercise before turning in again, but I had had enough, and the retreat soon became a general one. The day was a good one for me in spite of the uninviting start, for I put in a couple of hours mending one pair of my windproof trousers, and Browning put in the same time on my working pair, which were so rotten with blubber that a master hand was required to prevent the stitches drawing through. In the evening Levick gave the first of a short series of anatomy and physiological lectures, and the discussion afterwards was carried on until one the next morning. A favourite game with us now was a nightly examination with questions based on the chapter read on the previous night. As good memories are not the rule, some of the answers one received were very amusing.

In view of the continuation of the open water and the fact that we should have to make the trip across the Drygalski in consequence and stay here until well on into September, we were obliged to further reduce the food ration, and so it was decided that for the whole of August the biscuit ration must drop altogether. We felt we should do well enough on an increased ration of meat and blubber, with an occasional stick of chocolate or a few lumps of sugar.

The blubber of the last seals we had killed was like lard or butter to look at, and tasted better than any fat we could remember. "Nutty" was the word used by those who should have been the most competent judges, and certainly the unexpected pleasure we obtained from this oily fat and the extraordinary fitness and good temper which it produced were the most surprising feature of the winter's diet.

We were not likely to have any more trouble about supplies of meat, for on several occasions during the next few days we saw Weddells cruising about, and it was fairly certain that some would come up before our present stock of meat was exhausted. The end of

July therefore saw us for the first time free of anxiety about food. Our boots, indeed, were now becoming our greatest problem, and I believe that if they had not always been frozen they would have dropped to pieces. When kicking loose a piece of seal-meat that was frozen to the icefoot I lost the whole of the lower sole from one of mine, and from then on I could feel every rock through the upper sole, while in places it was worn through altogether. Levick's boots also let the snow through, and Dickason's gave way altogether on July 28th. There was no doubt something would have to be done, but the question was—what? The attempt to make moccasins out of uncured sealskin had proved a failure, for however much the skin was scraped it still remained greasy. Cure it we could not under present circumstances, and it looked as if we should have to adopt the Esquimaux expedient of chewing the skin, with this essential difference, that we had no wives to chew it for us.

## CHAPTER XXIII

### AUGUST AT THE CAVE

The light returns—Magnificent skies—Search for a hidden dépôt—More trials of a messman—A note is placed on the dépôt pole—We dig out sledges and prepare for a start as soon as possible—"The Promise of Day"—Our hearth is flooded—The sun returns—Campbell's birthday—A glance back at the commencement of the winter—Sledging preparations continue—The weakening of our roof—An argument and an amusing bet—Browning still ill—A "sailor's pleasure"—Coming events cast their shadows before.

"AUGUST 1, 1912.—Here we are at the first day of another month, and it is very satisfactory to review our position. We are looking forward to the imminent return of the sun, and are reconciled to waiting until the end of September and crossing the Drygalski on our way home. There is already light for several hours' outdoor work when it remains fine, and, although the wind continues as strong as ever, it is far less galling now that we can see our way about, and it is only drift-carrying winds that prevent us from fetching necessaries. We have also four seals, and from now on we can look forward to the possibility of seeing a relief party any day.

"Magnificent skies herald the coming day, and at noon it seemed as if the sun could only be just below the horizon, so bright was the glow. The chief feature of the display as usual is the series of broad bands of colour extending at noon almost from the zenith to the horizon."



The recent falls of snow were destined to give us a good deal of trouble in the early part of this month. All permanent drifts had been increased in thickness by 3 feet or so, and many new ones had been formed. We first appreciated the effect of this when, on August 5th, the weather being fairly decent, we made a sally to fetch in some more meat.

The depôt was completely hidden, and half an hour's work with a shovel was required before we could find it at all. It was practically the first meat depôt we had made, and as the skuas had still been about when we cached the meat, we had spread the still unfrozen sealskin over it as a protection. The skin had, of course, frozen hard down on the meat, and, in addition, all the joints were frozen together. The seal was, therefore, almost as much trouble to break up as an unbutchered carcass. A pick had to be fetched and used and the wastage of meat was considerable. Ice-picks make rough carving utensils, and scraps were flying everywhere, while I smashed one skull to bits and wasted the brain.

From time to time when seals had been killed I had put aside the best portions of the undercut as a contribution towards our sledging ration. This and half our store of Oxo had been buried in a shallow pit marked by a bamboo-pole a few yards to one side of the entrance to our cave. The winds had very soon removed this bamboo, and as we had few to spare, and the depôt was very obvious, I had not thought it necessary to replace it. I had reckoned without my host, however, for the snowstorms had added a thickness of 3 feet to the drift and the depôt was lost to sight. At the end of the first week in August, as our available Oxo was nearly finished, I was compelled to search for this cache, and on the 9th I spent several hours by myself digging for the lost meat. The next day I was messman, but on the 11th and 12th digging was once more

resumed, and on the latter day we had four men at work. It was not until the afternoon of the 12th that I found the depôt, just 18 inches outside the square we had drawn to indicate its possible position.

That the snowy weather had unpleasant aspects may be gathered from my diary for the 10th, the day on which the sun was due to return.

"Dickason and I have had a hard day as messmen, for things have not gone too well with the fires. Dickason had just departed with the stove (cursing and coughing as he went) for the outer regions, and when the fire was extinguished it made the most fearsome smell we have as yet experienced. It was truly nauseating and very irritating. When we got up this morning to start the fires, he found the drift was level with the top of the chimney, and when the latter was cleared the snow simply sizzled down and built up a cone 2 or 3 feet high. We soon had the plug in again, and Browning and Abbott formed a rescue party, and with the spare biscuit-tin opened at both ends, and a piece of sealskin, they made a very respectable chimney, bolstering it up with large blocks of snow, which I had cut out yesterday, and using the sealskin to close the opening in the side through which normally the biscuits are taken out. The tin has also incidentally become a sound anemometer, giving us a very good idea of the force of the wind. After the new chimney was rigged up, Dickason and I spaded out the snow into the shaft and the others threw it out, but some must have got into the tin of frying blubber, and each piece of fresh blubber nearly or quite put the fire out. At times we both got rather annoyed with it, but on the whole we kept our tempers better than I should have expected, far better certainly than we should have done a few months ago. As the sun returns to-day we are serving out sweet cocoa, two biscuits, six lumps of sugar, and one stick of chocolate, and this makes up for the many





THE "TORPEDO" HATCH AT THE ENTRANCE TO THE SHAFT.

trials during the day. The wind is reported nearly drift-free but rather stronger, and the open water is as large as life. We are thinking of calling our home 'Seaview.' "

On the 13th Campbell, Levick, and Abbott walked over to the Hell's Gate moraines and left a note on our depôt pole in case a relief party should by any chance come from the Wood Bay area, and they also brought back two tins of oil for me. They saw the direct rays of the sun on the foothills to the west of us, and we might now expect to see him any day from the entrance to the cave. On the 14th Campbell climbed the rock spur at the back of the drift and saw half of him for the first time.

On the 15th we made another trip to the depôt in spite of the ever-present wind, and we dug out the iron-runnered sledge and ran her across to the north side of Inexpressible Island, where we left her for the present. It was a cold day, and Campbell, who had no windproof helmet, was bitten several times on cheek and nose. Once, indeed, we had to stop and thaw out four places at once for him, each of the frozen patches of skin being as big as a shilling. The wind remained as exasperating as ever, and none of us had met anything approaching it before. It had now blown for 180 days without ever lulling for more than a few hours at a time.

None of us saw the sun on this day, but for a couple of hours before noon there was a brilliant vertical beam of light stretching from behind the northern foothills to about halfway to the zenith. This gave a delicate golden glow to the hazy blue sky through which it passed and a brilliant flush to the clouds. Had I been an artist I would have painted that sky and called it either "The Promise of Day" or "The Dawn of Hope."

The next few days saw one or two more trips over to

the depôt at the moraines, and on the 19th I had my first glimpse of the sun. It was great to see him again, but I did not stay out long, for the wind was with us as usual, and was blowing me about all over the slippery snow.

The routine both of cook and messman had now been working like a charm for some time, but just when we were beginning to congratulate ourselves, a new trouble arose. When the hearth was first made it was a depression 3 feet square by 6 inches deep, and this, as I have said, was paved with twelve large stones. Since the fires had been really adequate, they had, of course, melted every day a certain amount of water from the walls and roof of the galley. This water had trickled down and had gradually filled up the hearth depression, until now it overflowed the bottom of the stove every night, and a considerable amount of heat was used in raising the temperature of the flood. This was a nuisance, but it became really a serious drawback when our old "Simplex" stove sprang a leak. The water would then soak up through the cracks and put the fire out altogether. It was not until a new stove was made that we could get along at all, and even then the messmen had to spend the first part of the day picking out yesterday's ice, while if the stove was left in the fireplace for half an hour after the fire was extinguished it promptly froze to the floor.

August 20th was Campbell's birthday, and another festival. The end of our igloo provisions was now well within sight, but then so was our stay here, and we had only to cast our minds back to the early days of the winter, and by contrast we felt that we were in clover. That we actually made use of these memories to enhance the pleasure of our present comforts can be gathered from the following extract from my diary:—

"We have just been discussing and laughing over some of the old troubles we had when we first moved into



the cave. They were very real at the time, but even then we managed to squeeze a smile out. It is five months to-day since the other party came in after losing their tent, and we sat round the primus singing 'Is London where it used to be?' We had a very cheery evening, but gradually cooled down as we realized we would have to sleep two in a bag. We seem very comfortable now by contrast."

Sledging preparations now commenced in earnest, and on August 23rd we started to clean some of the aluminium gear, and, in particular, one of the frying-pans which we wished to use to cook some steaks of seal-meat for lunch on the march. We intended to fry these and eat them almost raw with biscuit. Tents and sleeping-bags had also to be pitched, and the work was of course very slow, for the conditions in the cave were not such as to favour sewing with bare hands. Either the temperature was well below freezing or else there was no draught at all. The latter case was by far the worst, for then the smoke became very bad and our eyes suffered accordingly, while the warm air cooped up in the cave caused the roof to melt at a terrific rate, and our bags were deluged with a black, blubbery shower which wet them through and made everything uncomfortable, and, if possible, more dirty than before.

On August 22nd a wind of unusual force even for here rose, and this continued with uninterrupted violence until the 28th, when it eased up somewhat. All this time we were confined to our beds, but our greatest worry was once more for the stability of our roof. The drift was gradually wearing a way through near the chimney, and on the 27th a hole actually made its appearance. Drift commenced to blow into the cave, and Abbott and Dickason woke from their sleep with what they thought was spray whipping their faces. Fortunately a lull did come, and we were able to fill the

scoop with snow-blocks and loose snow, and so saved the roof again.

The lull also gave us an opportunity of replenishing our stores, which were again getting low, and we fetched up enough of everything to last for a fortnight. It was not a pleasant day, as days were at Cape Royds and Cape Adare, but for Evans' Coves it was a regular gem, though the wind increased towards evening and was very biting.

The end of the month was welcomed with unusual pleasure even for here. It was the end of our fast from biscuits, and this had cut us harder than any other reduction we had made. Next month was to see us without chocolate or sugar, but we never expected this to be as big a trial, and, indeed, it never was.

Most of our talk and all of our small wagers during the winter had centred about questions of food, and never more so than now, when we were deprived of biscuit altogether. It was one of those bets that had for its sequel an incident which showed very well the spirit in which the men met the discomforts which fell to their lot. The work of an unusually harassing day was over, and we had all retired to our beds after a very insufficient hoosh. The first few minutes after the messman turned in were, as usual, spent by all hands writing up diaries and settling down for the evening. Campbell and I had been discussing the rations for our trip down the coast, when my attention was attracted to a lively argument which was proceeding in the men's quarters. I forget the exact subject in question, but I fancy it had something to do with the number of public-houses on either side of Portsmouth Hard. As far as I could gather, Dickason seemed to know one more than the other two, and the latter could not be persuaded that this was possible. In the absence of a reliable reference-book, the question was left undecided, a fish supper being wagered on the result.

The bet was booked and all was quiet again, when Dickason, who had evidently been tasting the joys of anticipation, said, "What about drinks, Tiny?" This was a poser, but after a minute or two's thought, Abbott replied, "Well, if I lose, you shall have a pint of beer with every fish." With our appetites at their present standard, this did not look as if it were going to be a very sober supper, even with decent-sized fish, but Browning evidently meant to make the most of his opportunities, for he said, "Right! we'll stick to that, Tiny, and I'll have a plate of whitebait." I believe the supper has not yet come off, but when it does it promises to be both costly and exciting.

Browning was still to be reckoned amongst the most cheery of us, but we were now beginning to be very anxious about him. It seems that he had suffered from enteric fever some years before the expedition, and he still appeared to be delicate as the result of this very severe illness.

Whatever the cause, he certainly never was able to adjust himself to our present meat diet, and neither could he become reconciled to the salt-water hooshes. He had been ill pretty well every day of the winter, and his condition was now the subject of many discussions between Campbell and Levick. While we were on short rations of meat there seemed to be nothing to do but hope, but now that we had enough meat to increase the ration, and more than enough blubber for the fires, it seemed possible to allow him to make his own hooshes with fresh water, and this was the plan finally adopted.

My diary of August 31st is interesting in the light of after events, for it foreshadows the approach of the epidemic which was to make the next month the most critical of all: "Another month off the rolls. Dickason and I messmen. Another successful day. Medium westerly wind; very cold. Sun showing through the mist this morning when I went out, and for the first

time shining directly on to the entrance of the hatch. No one has been far to-day, and no outside work has been done. Abbott has mended a rent in Levick's sleeping-bag, and meanwhile Levick went through his ditty-bag. This is what I believe is called a 'sailor's pleasure,' but it must have been cold comfort to-day. We have been getting some very rancid bits of meat lately, and I fancy it all comes from the same seal, one we killed in the autumn and depôted under his skin, the latter being placed blubber downwards. Either the seal himself was in bad health or the blubber has turned rancid under the autumn sun, and some of the oil has soaked into the meat. As a precaution, since the bad taste in our hooshes commenced, we are intending to have a hole bored in the blubber board, and have it hung up so as to keep it off the floor, which is still in a frightful state in spite of a regular clean out Wednesdays and Saturdays."

## CHAPTER XXIV

### THE LAST MONTH OF OUR IMPRISONMENT

September comes in like a lion—Stockholm tar in the hoosh—Swedish drill—A tainted hoosh—Liver in tea—Ptomaine poisoning—"Granite hooshes"—More ptomaine poisoning—All down but Campbell—The oven is condemned and replaced—Cutting up sledging meat and blubber—The first walk for ten days—A hunt for a specimen depôt—Another seal—The specimens are found—Carrying our food and equipment over to the sledges—The start is delayed by wind—We leave the cave on the 30th.

"SEPTEMBER 1, 1912.—September has come in like a lion, and, to be consistent with the other months, will probably go out like a lioness robbed of her whelps. A strong gale has been blowing all day from the south-west. The sky is perfectly clear and the sun lovely, but none of us have been tempted out at all. Browning has partly mended his decrepit sleeping-bag, and the rest of us have lain lazily still, carrying on desultory conversation. We have had our first biscuit on the new routine to-day, and as we have reached the end of our sugar-box, there is a little dust to sweeten the tea. As a variant in the hoosh this evening, we had a strong taste of Stockholm tar, for Campbell lost his spill (2 feet of tarred rope with a large carbonized knob at the end of it), and it turned up in the second mug of my hoosh. Dickason, who has joined Browning on the sick-list, was still more unfortunate, for he dropped one of Levick's ill-flavoured pills into his hoosh and very successfully spoilt the lot. Despite the tar, we all went our full allowance, and

most of us enjoyed it. To-morrow we start preparations for sledging, and in future we intend to do Swedish drill every day that the weather will not permit us to exercise outside. Browning is having steaks and blubber cooked for his lunch, in order to feed him up before starting."

During this night the wind increased to a gale, blowing with a force unsurpassed by anything we had had before. The chimney-plug had been badly stowed, and for the first time since the autumn the temperature of the cave was so low that we could not sleep continuously. We started Swedish exercises this same morning, specializing in exercises for the stomach and legs, and the fact that we could not stand upright gave a very novel appearance to the class. Any exercises which involved stretching the arms above the head we were obliged to perform on our knees, and most others were performed with head and shoulders bent, as if in a devotional attitude.

We could tell by the way a single set of exercises took it out of us that this course was very necessary, and we were fortunate in having with us both a naval surgeon from the physical training department and also a gymnastic instructor.

That same evening we had our first strongly tainted hoosh. It was obvious to every one that something was wrong, though we could not settle what it was, but we were too hungry to throw away the stew. We thought at the time the meat must be from a seal that was not in good condition when killed, or else that the taste was through some pieces of meat which had been thawed in the oven and left in there for some time.

September 3rd was marked by another more than usually striking accident—this time to the cocoa. A large piece of liver was missing when I put the second instalment of meat into the hoosh, and as I was serving out the cocoa I suddenly came on this lump of raw meat



lying at the bottom of the pot. Unfortunately, too, it was a piece of the liver that had most certainly been responsible for part of the taint in the hoosh, and as it had soaked in the cocoa-water for some time, it is probable that some part of the trouble which followed was due to this accident. Those of us who, happily for themselves, were not in the secret put down the new flavour as an aftermath of the tea of the day before, but Dickason and I were obliged to shut our eyes and stop thinking before we could enjoy our cocoa. The significant glances that passed between us raised the curiosity of the customers, who at once guessed what type of thing had occurred from analogy with other similar occasions. We managed, however, to cause them to infer that the foreign ingredient was seaweed, and it was not until I was typing my diary some three months later that they heard what had actually happened. Seaweed and penguin feathers by now had become recognized as diurnal intruders, and it was customary now to drink the latter half of the last mug of cocoa from between closed teeth.

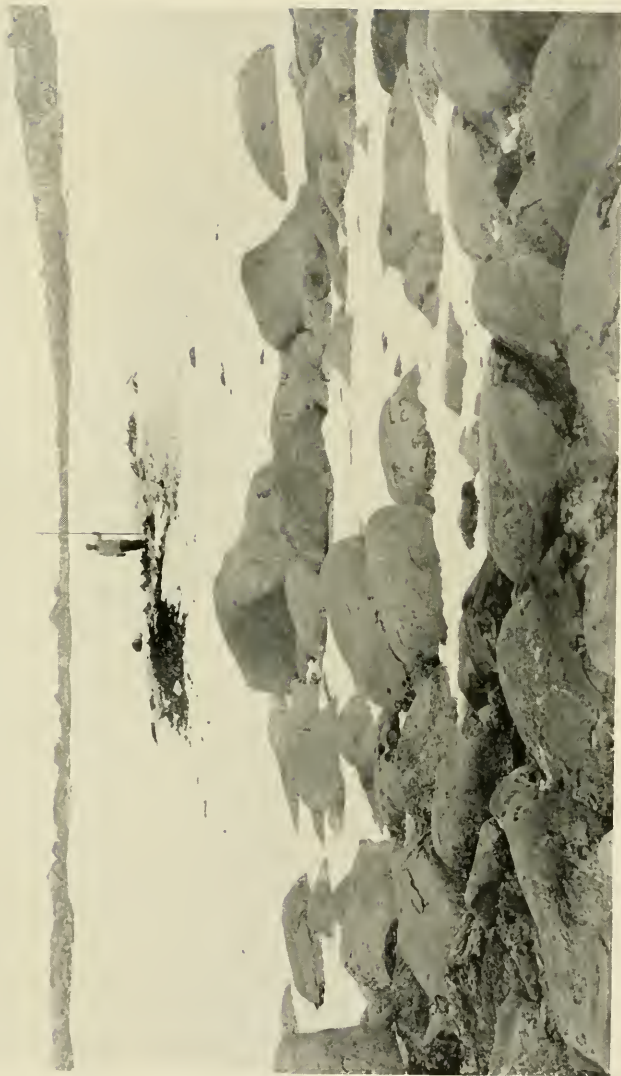
Another unwished-for dish which was again beginning to worry us, since we were working on the earlier butchered seals, was the "granite hoosh," the most striking constituent of which were the small wind-blown pebbles which had been frozen on to the seal-meat joints. A sudden jar to the teeth by a bite on one of these might have had serious consequences, and once one of the diners cried "'Ware granite!" the hoosh was discussed very thoughtfully, thoroughly, and slowly. The only thing to be heard on such an occasion was an occasional crunch, followed by an appropriate phrase, and an audible smile from the five more fortunate men.

On the 4th all but Campbell developed ptomaine poisoning, and yet when the evening hoosh again proved to be tainted we had not the strength of mind to go

without it, although we expected a repetition of the attack the next day. This was the weak point of our position. Even now we had none too much meat and blubber. We could not afford another hoosh if we threw away the first one, and, worse still, we did not know for certain the cause of the epidemic, nor how much of our meat was affected.

Undoubtedly the liver on this day and the preceding one was bad, but the epidemic dated back to the day before, and could not be assigned wholly to this cause. The disease was very virulent, and already we could feel its weakening effect. It was evident we must endeavour in every way, and at whatever sacrifice, to get rid of it. But where was its source to be looked for?

The following day the liver was condemned under an overwhelming weight of evidence. Campbell had thrown his away on the previous day, and the rest of us had eaten ours. His sacrifice was rewarded, for again he escaped, while the rest of us went from bad to worse ; we were all so bad that day, in fact, that Levick ordered a change of diet, and we had a steak each instead of our first hoosh, with a thin, Oxo-flavoured hoosh to follow. In consequence of this change in our food, September 6th saw a slight improvement in most of us, but the 7th again saw us down with the poisoning, and it was clear now that the disease was due to more than the liver. Our thoughts therefore once more reverted to those tainted bits of meat we had had from time to time in our hooshes for some weeks past, and this in its turn suggested that something must be wrong with the "oven." The tin was therefore examined, and we found that it was not quite level, and that in one corner there was a small pool composed of a mixture of blood, water, and scraps of meat. Evidently the main source of the trouble was to be sought for here. Each joint, as it thawed out under the influence of the hot air from the stoves, added its quota to this puddle ;



WINTER QUARTERS FROM THE BEACH.



and, as the mixture was thawed out for an hour or two every day, the bacteria found favourable conditions to breed in, increased in number rapidly, and made quantities of ptomaines. As the pool increased in size, each joint that went into this particular corner was coated with the mess, and so it was gradually being conveyed into our systems through the medium of our unboiled hooshes. No wonder our systems revolted, and the wonder is that the revolt was not more serious even than it was.

As it happened, we were near the end of another biscuit-tin, and so the old oven was condemned, taken down, and thrown outside ; a new one was substituted, and from that time all of us but Dickason and Browning began to get the better of the illness. Dickason never entirely recovered until we left the cave, and the return to half-sledging rations enabled his system to throw off the effects of the poison ; and Browning remained ill, and, in fact, gradually grew weaker, for some weeks more, until we were able to switch him off a meat diet altogether. In this case, however, the ptomaine poisoning was superimposed on his old trouble, and it is therefore difficult to say how much was due to one and how much to the other.

In spite of the sickness, the domestic routine, of course, went on much as usual. If it was the turn of one of the patients to be messman, he was doctored up enough to enable him to do his work if possible, and if the disease had too strong a grip the others shared his work between them.

In the first week of the month we started to cut up the sledging-meat, and this much increased the work of the messman. It was a work, however, to which no one objected, for it meant freedom to march once more, and the possibility of changing our present circumstances for better ones—worse conditions, we believed, were impossible. So great was the desire to have the meat ready, indeed, that a spirit of emulation arose,

and each messman strove to lower the record of the previous one. I had purposely set aside for sledging rations joints without bones, and these were now thawed out in, on, and round about the new oven, and were then cut into neat dice about half an inch in section. As each bag of meat was completed, it was carried outside and depôté in the lee of a boulder well beyond the drift, where it was left until we were ready to move it over to the sledge. Gradually the depôt increased in size, until eight bags reposed here in safety, each containing forty-two mugs of meat—a week's provisions for three men. Thus we had four weeks' provisions at full rations of meat for six men. The meat we had saved was not quite sufficient to supply this amount, but we managed to get one or two more seals when we wanted them.

In addition to this hoosh-meat, we also fried a number of steaks of seal-meat, intending to use these as a lunch ration, but, as will be seen later, these were not an unqualified success.

The blubber, meanwhile, was all cut into strips about six inches long and a couple of inches in cross-section, for it was determined to take a small blubber-board and knife with each unit and cut this very necessary article of diet as we wanted it. It was all stowed in the venesta case that had formerly held our sugar, and we found that this method of carriage answered very well.

The spirit of anticipation raised by these preparations made the days pass very pleasantly as soon as we were recovered from the ptomaine poisoning ; and it was as well that this was so, for the draught had to be reduced in order to heat the joints enough to thaw them through, and sitting in a bath of ice water, with two smitch eyes and a watery nose, is not a pleasant occupation.

The 10th was the first day that I got beyond the drift since the beginning of the month, and I found,



as the others did also, that the illness had taken all the strength out of me. I could scarcely stagger from the cave to the icefoot and back without a rest, and when I had carried up two loads of sledging-meat I was beaten to the world, and was very glad of the drink of hot water which we had lately taken to having for lunch. It tasted of blubber, seaweed, and penguin, and was full of reindeer hairs, and, altogether, would not have been an appetizing drink under ordinary circumstances ; but since our attack of poisoning we were all consumed with a raging thirst, and we could have drunk any sort of mud if it would have assuaged this.

On the 11th I took the opportunity to look for my specimen depôt, which had been placed by Levick and his party on one of the drifts near the site of our Hell's Gate depôt. This had been completely covered by the recent snowstorms, and all clue to the depôt was lost.

As the depôt contained almost all the results of our summer journey, it was imperative that it should be found, and so the next fine day—the 17th—Abbott and I again went to the site of the old camp and spent two or three hours unsuccessfully trying to locate the cache. Unfortunately, the digging caused a slight relapse on my part, and I was obliged to desist early. On my return to Evans' Coves I walked down to the beach, with the intention of chipping out the brain from a seal carcass down there, but when I arrived at the icefoot I saw a seal up, and at once returned for an axe and a knife. Browning returned with me, and together we killed, skinned, and butchered the beast. It was a long job, for the knives were very blunt and the wind so cold that we had to take turns, one man warming his hands inside the body of the seal while the other worked away till he in his turn was almost frostbitten. We managed to get through the work just as the others, who had been digging out sledges, returned, and we then brought up a piece of liver for the hoosh. We

had not dared to taste any liver since the last bad one, but we knew that this fresh one must be safe, and our abstinence only caused us to appreciate the change so much the more. The evening meal was all the more appreciated also because, in consideration of the unusually hard day's work and of enough seal-meat to complete our sledging ration, I allowed myself to be persuaded to serve out an extra biscuit.

It was about this time that Browning was first allowed to make his own hooshes with fresh water, and a marked improvement in his condition was an immediate result of the treatment. The improvement, however, was not permanent, and he gradually sank back to about his former level until we started sledging, when the unaccustomed exercise caused him to have a slight relapse. His condition at this time was very grave indeed, but Levick watched him continually and prevented him from going downhill too rapidly. We all felt now that it was touch and go whether we should get him down the coast alive, and it seems probable that the new fresh-water diet, although not a complete cure, was decidedly helpful in preserving his strength.

On the 20th we made yet another attempt to find the specimens, and this time we were successful. Campbell was the lucky man, and it was quite aggravating, after Abbott and I had been working steadily for some hours, to have him come and dig a few holes here and there and light on the specimen depôt in about five minutes. However, I was too glad to see the specimens again to worry about who found them, and on this day, for the first time since the specimens were known to be lost, my spirits were once more normal, or rather above normal. After all, the temporary loss of the specimens was perhaps a blessing in disguise, for it caused a lot of good healthy exercise with pick and shovel—exercise which was very necessary if we were to be fit for the journey down the coast, and which

we should certainly not have taken had we not had sufficient motive.

The 21st saw the old westerly gale back with us again, and it blew strongly with heavy drift. It was annoying to find ourselves confined to barracks again, but we took advantage of this spell of enforced idleness and finished off our sledging preparations.

The mending of the tents was finished, and they were examined for unnoticed holes ; the caps of the tent-poles were strengthened, and our wind-clothes and sleeping-bags were repatched. While this was being done I bagged up the rest of the provisions—the meat was already finished—and conveyed the bags outside to our depôt beyond the drift. A careful examination of the remaining rations showed that the food had worked out to a nicety. I had calculated at the beginning of the winter that we would have half-rations of biscuit, cocoa, chocolate, pemmican, and sugar for a month of twenty-eight days ; and this proved to be the case, with the exception of a shortage of one day's ration of chocolate. In addition to this, we had a certain amount of Oxo, thus allowing us to reserve the pemmican for the evening hoosh and replace it with Oxo and blubber in the morning hoosh.

On the 24th, Campbell, Levick, and Abbott carried over most of the meat and the weekly food-bags and stowed them on the sledges. They had a great stroke of luck on the way home, for they secured an Emperor penguin, and the same night part of him went into the hoosh. One-half of the breast of the bird was put aside for Browning, in the endeavour to make his insipid, saltless hoosh more palatable. Dickason and I spent an energetic day in the cave, the former cleaning aluminium gear and myself flensing sledging-blubber and cutting it into strips. That night the igloo presented a busy scene long after normal work-time, for Browning was busy butchering the Emperor,

Dickason mending a primus, Abbott mending harness, Campbell sorting his clothes, and myself packing specimens.

The next day also saw the cave a haunt of industry, and all our thoughts were of the approaching march.

"It has been warm and pleasant working in the cave, and the wind outside was not cold, though sufficiently strong to make it unpleasant for the men when they were fetching sea ice for the cookers. If the fine weather continues we start away to-morrow.

"We change completely on the morning we leave the igloo, once for all, I hope, and then we cart the rest of the gear over to the sledges, where Campbell and Abbott lash it in, while I take over my specimens and a bamboo-pole, with a couple of notes attached to it, to leave at the depôt. We are endeavouring to get away with as little grease as possible, but the necessity of having blubber for at least one meal a day makes a deal of oiliness about the sledge-loads.

"I have sawn out a couple of venesta-boards for blubber-boards, and these are to be hung by a lanyard to the sledge. Everybody is to provide themselves with a lunch-bag to keep their lunch in each day. If we start to-morrow I shall have a day's ration of biscuit to serve out without trenching on the sledging-biscuit proper. Everybody seems to be recovering from the last epidemic, this time for good, I hope. The change to Emperor and seal, instead of seal alone, appears to be healthy as well as palatable."

On the 26th we carried out the programme described in the above extract from my diary, but with the difference that the wind decided us to put off our start. The 27th was also spoilt as a marching day by the same strong wind, but a hunting party secured and butchered a seal, and so provided the meat for the extra two or three days' stay that might be necessary before the weather was favourable for starting.



Priestley.

Levick.

Browning.



Abbott.

Campbell.

Dickason.

AFTER NINE MONTHS WITHOUT A WASH OR CHANGE OF CLOTHES.

To face p. 340.





The 28th also started badly with a nasty W.S.W. wind, but the weather improved about noon. After a walk to get some exercise, Abbott and I climbed the hill at the back of the drift with the object of having a look at Relief Inlet, which we should have to pass on our southern journey, and while up the hill I happened to glance to the north and saw six Emperors on the sea ice in Terra Nova Bay. As Emperor meat would be a great addition to our sledging fare, we at once formed a hunting party and killed five of these birds ; and we then carried the carcasses over the hills to the drift, where they were butchered and the breasts added to our stock of provisions for the march.

The next day brought with it the same raw wind, but it was again not too cold to work outside with comfort, and this, which was to prove our last day at the cave, was spent transferring still more of our stores to the sledges we were using for the march. Finally, on the 30th we left the cave for the last time, and moved off on the homeward march.

At last we were on the move, and that night we actually camped in a sledging-camp two miles from winter quarters. In spite of the small distance it had been a hard day's work, and the packing of the sledges was slow and tedious. It was a great relief to put on clean clothes, and at our evening meal we had two biscuits to eat and sweet cocoa, with, last but not least, seal-pemmican hoosh. I have never looked forward before or since to spring sledging, and yet we were as pleased as anything to be away from the cave, although it was still cold and frostbites and burns were frequent. I am afraid the commissariat took up more than its share in the tent, for we had a makeshift lot of food-bags and very bulky food, but it was not an inconvenience at which any one was likely to grumble under existing circumstances.

## CHAPTER XXV

### WE FORM OUR OWN RELIEF PARTY

Our first calm day—Spring sledging a pleasure for the first time—Raw-meat lunches—The new ration a success—Browning and Dickason not fit to pull—The great crevasse—Delayed by a wind—Relief Inlet—A fight between two seals—The Drygalski Glacier—Troubles with barrancas—"Drygalski past"—Mt. Erebus—Farewell to Mt. Melbourne—Relaying in heavy pack—Mirage—Sledging hunger makes itself felt—A tribute to Professor David's party—Sledging tempers.

THE bad weather seemed to have broken now that we were on the march, and the morning of October 1st proved to be the beginning of our first calm day. We broke camp in the morning at eight o'clock after an excellent breakfast, and commenced to make our way round the landward side of the foothills. The surface was not good, and we made very few miles during the day, but it was such a relief to get away from the igloo that nothing was able to damp our spirits. I noted in my diary that night: "We are still in a dazed state at the new luxuries, and not the least of these is the first calm day for months. It has been a real calm, the sort when you can hear the silence, or rather when the silence is so perfect that numerous far-distant and infinitesimal sounds together cause a buzzing and crackling which gives a distinct character to the day. It is rather like listening to the hum of city life from far out in the country. We have been reduced to  $4\frac{1}{2}$  pulling units, for Browning is wholly incapacitated with diarrhoea



COMMANDER V. L. A. CAMPBELL, R.N.



and general weakness, and Dickason half crippled by the former. We are all hungry and looking forward to our hoosh, and those of us who are well are feeling fit, though tired. We have the hills above Cape Irizar in sight, and we have seen the last, I trust, of Hell's Gate."

As soon as we were well away from the igloo we settled down to sledging diet proper, and the ration we adopted now was maintained practically without change until we caught our first seal a little south of the Nordenskjöld Ice Tongue. As at the snow-cave, we specialized in breakfast and dinner, just taking a light lunch *en route* in the middle of the day. The morning hoosh for a unit of three men consisted of three mugs of seal-meat and one of blubber, water to make the hoosh up to a mug and a half per man, and the solid equivalent to two and a half pints of Oxo at service strength. After this morning hoosh cocoa followed, and then we usually ate two of our allowance of four biscuits. Lunch was taken in the lee of the sledges, and at first we tried to eat seal steaks we had cooked in the igloo. In the bright daylight, however, these looked so black and filthy that none of us were able to tackle them, and we found it much more palatable to break lumps off the Emperor penguin breasts we had added to our larder during the last week at Inexpressible Island and to eat these raw.

The frozen meat melted in our mouths and was most beautifully tender. I cannot say that I very much enjoyed these lunches, for in spite of the quantity we had eaten at one time or another, I had never got to like the taste of raw blood, but certainly the meals were economical of oil, and they were perhaps as healthy and nourishing as it was possible for a lunch to be.

We continued to eat penguin or seal meat raw for lunch until we were on the sea ice, when the saving of

oil was no longer a permanent necessity, and then we would expend a little oil lightly cooking the lunch steak in the breakfast hoosh. The lumps of meat and blubber were then fished out of the stew and laid aside to cool while we cleaned the pot of the breakfast hoosh, after which they were put back in the cooker until lunch-time. This meat lunch was usually tempered with one of our remaining biscuits and the ounce and a half of chocolate which was our daily allowance.

Dinner consisted of another hoosh containing the same amount of meat as the morning hoosh but flavoured with a dipper full of pemmican instead of a mugful of blubber, and it was because of the pemmican that this meal became the best moment of the day. Our pemmican consisted of 60 per cent. of fat and 40 per cent. of shredded meat, and was an ideal food for sledging. Under ordinary circumstances, when one first starts on a journey one's full allowance is seldom eaten, but, as time passes and the work and the keen air take effect, one becomes hungrier and hungrier, until the sledging allowance of pemmican is not sufficient to satisfy the cravings aroused. It is then that pemmican is truly appreciated at its full worth. Nothing else is comparable with it. I have taken all sorts of delicacies on short trips when the food allowance is elastic, I have picked up similar delicacies at depôts along the line of march, and I have even taken a small plum-pudding or a piece of wedding-cake for a Christmas treat, but on every such occasion I would willingly have given either of these luxuries for half its weight of the regulation pemmican. It can therefore be imagined how we looked forward to a resumption of pemmican after a six months' enforced abstinence, and we would probably at that time have given as much for a lump of it raw as we would for an assurance of comfort for the rest of our lives.

The pemmican-flavoured hoosh was again followed



by cocoa and a solitary biscuit, and this closed the list of food for the day. When we obtained more seals the meat ration was increased as much as the party liked, and the commissariat officers' responsibilities were restricted entirely to the biscuit, chocolate, and sugar. These latter, indeed, we were obliged to reduce, for we took longer to get down the coast than we had expected, and at one time it certainly looked as if we were going to be restricted once more to a meat diet.

The second day of our march remained comparatively fine, though with a drift-bearing breeze, for some hours round about midday. Our course was straightforward pulling over a surface spoilt by drifts of granular snow, whose action may be likened to that of a fly-paper on a fly attempting to use it as a promenade. These caused us much general annoyance, and in particular a general soreness where the waistbelts of our harnesses galled the flesh underneath them with an unaccustomed pressure. We crossed one small inlet in the glacier during the day, the same I mentioned in my account of the short trip made by Abbott, Dickason, and myself in February. The snow bridge which covered it in places was 170 paces broad, and it was undoubtedly the broadest crevasse I have ever seen. It would have made a good photograph, but there was too much drift flying. Along most of its course the southern cliff descended sheer into the depths, while pinnacles of ice were separated from the main mass here and there, leaning out over the abyss as if they might fall at any moment. Every few hundred yards, however, the crevasse was more or less completely bridged with snow.

The drift which accompanied the wind on this day and the next compelled us to steer by compass, and it was curious to think of the contradictions involved in this march of ours down the coast. Our ultimate destination was England, far to the north of us. We all

felt that every step was taking us nearer home, and yet our immediate destination was as nearly as might be due south from us, while at the same time, thanks to our position with regard to the Magnetic Pole, the compass course on which we were steering was N.E. by N., northerly.

October 3rd was ushered in by a strong westerly wind, with snowdrift flying to about man-height above the ground. We started at the usual time, but about 11 a.m. the drift thickened considerably, and as we could see traces of rough country ahead of us and the wind was increasing rather than decreasing, Campbell decided to pitch one of the tents and give the weather a chance to ease up. We therefore all had lunch together in the tent, and afterwards, at Abbott's suggestion, all hands turned to at a game he suggested and which was called "Up, Jenkins."

This game served its purpose by keeping us occupied and warm for an hour or so, and then Campbell and I went out to look at the weather, and as this was thicker than ever the other tent was pitched. We then had hoosh and turned in, not at all sorry to be able to give Browning the rest he would obtain from a long night.

The next day the wind continued and we were confined to our tents, but on the 5th we again made a few miles. We pulled with a will this day and the next, for we were all longing to reach Relief Inlet, where we could once more obtain sea ice. The supply we had brought with us from Inexpressible Island had given out some two days before, and our hooshes were very insipid in consequence.

The surface we had covered on this day, also, was not favourable to quick travelling, for the sastrugi were 2 or 3 feet high, and we frequently had to turn and face our sledges, giving standing pulls in order to surmount the crest of one of these snow-waves.

The following day, however, saw us camped on the

north shore of Relief Inlet, and once more we had palatable hooshes. The unknown part of our journey was also behind us now, for Professor David and his party reached this Inlet from Ross Island on their way to the Magnetic Pole, and in future our course would closely agree with theirs. It was on this very day four years previously that the Magnetic Pole Party had left Shackleton's hut at Cape Royds on their way here, and as we left Relief Inlet on our way to Cape Evans on the next day, we should have good opportunity of comparing our progress with that of the former party.

While we were crossing the Inlet on the following day we saw quite a curious sight. There were numerous seals lying about on the sea ice, and as we watched we saw one large cow come up through a crack and lie on the edge of the ice with her tail still near the opening. Almost immediately afterwards another seal's head appeared and viciously seized hold of her tail. The unfortunate cow managed to shake off her adversary fairly easily, but for some minutes she was quite hysterical, hitting her flippers against her sides and snapping her teeth very fast, and as she made off from the crack she left a trail of blood in her wake. This was the first time in our experience that we had seen seals attack one another; but later in this journey, near Cape Roberts, Levick and Abbott saw a fight between two bulls who had damaged each other considerably, many of the slashes going right through the thick coating of blubber into the flesh beneath.

The next few days were occupied crossing the base of the tongue of the Drygalski Glacier. This huge mass of ice stretches out for thirty miles into the sea, and is bordered on its north side by the open water which is a continuation of the waterhole at Evans' Coves, and it was therefore out of the question that we should go round it. The first day's march south of Relief Inlet was over undulating country, and we made several miles before we

camped, but on the evening of the next day we came to our first obstacle. The light was very bad all day, and towards the evening became worse and worse, until it was impossible to make out changes of level. Just after four o'clock, when we were starting towards what looked like an unusually high ridge of ice well above our level, the slight downward slope over which we were marching gradually increased, the snow became hard and polished, and the sledge took charge, swung round stern first, and dragged us all down the incline. We managed to stop her by digging the points of our ski-sticks into the ground and throwing our weight on these, and then we pulled her back into safety and Campbell went forward on the Alpine rope to investigate. To all appearance the ground we were on and that we had slid over was level, but we now found that we had been within half a sledge length of a 30-foot drop into a barrançã. Had we gone over it is most probable that some one would have broken a limb, and it is then unlikely that the party would have pulled through.

As the light did not improve we were forced to camp above this ice gully and wait in the hope of better light the next day. We were then able to resume our march, and the country we passed over the next day showed that we had been wise in stopping in time.

“ We have had another gruelling day over a succession of ice-waves from 40 to 50 feet high, with their broken crests facing the south. Every now and then one of these ends in a sheer cliff-face, and the valley becomes almost a gorge with one or two, usually one, steep faces. We have only had to relay once during the day, but after our experience of last night we prospected the descent into the troughs of the waves with Alpine rope before we ventured into them with the sledges, and this has taken up a good deal of time. The slopes up the barranças, covered usually with soft



HIS IMPERIAL MAJESTY IS DISDAINFUL.

To face p. 34<sup>th</sup>.





snow, have only just been practicable for the teams. Standing pulls were frequent, and the work was slow and wearing, so that altogether I should say that we have only made about three miles on our course. We have seen several crevasses this afternoon, some of them big enough to take a man, but they have all been well snow-bridged and are few and far between."

The next day (October 10th) saw us camped on the sea ice to the south of the Drygalski Ice Tongue, and though we had only covered one-sixth of the distance in miles we felt that we were already halfway home. During the winter the Drygalski had bulked large in our imaginations as an obstacle, and to this had been added the fear lest the sea ice to the south of it should prove as unreliable and unstable as that in front of our home at Evans' Coves. "Drygalski past" meant much the same to us as "Jordan past" to the Israelites of old, and it had become a proverb in the Northern Party's dialect which had been used every day when a stiff piece of work had been completed with difficulty. In particular, it was the phrase the cook invariably made use of when he had served out the second cooker full of hoosh at the evening meal in the igloo, for it meant that the back of the work for the day was broken and that soon he would be having his two days' rest. The glacier had not, indeed, proved as difficult as we had feared, but none of us are very anxious to cross it again with heavy sledges.

The greatest moment of the day, however, came when we surmounted the last rise of the glacier. From this we could see the sea ice, but none of us paid much attention to it at first, for Dickason declared he could see Mt. Erebus.

We were 150 miles away from the mountain as the crow flies, but sure enough there he was, the upper third of him showing plainly above the horizon, and surmounted as usual by a long feathery plume of steam.

We felt then that we were really within measurable distance of home and friends. Right under the shadow of that mighty cone lay the winter quarters of the Polar Party, and there, whether the party were there or not, would be a record that we could read, and which would tell us clearly what had happened to our comrades. This sight awoke our impatience as nothing else had done, and we turned our attention to the white plain over which was to be our road. Everywhere was heavy pressure ice, and it was plain that there were obstacles enough and to spare in front of us yet, but we had something photographed on our minds which would help us over these, and on any fine day in future we had only to look to the left of the line of march and we should see a beacon which was worthy of a country where everything is on a large scale.

With a last look to the north of us to give a farewell greeting to Mt. Melbourne, we harnessed up and drove our sledges down the northern slope of the undulation. Within five minutes our northern view was blotted out, and from that time also a veil seemed to have been thrown over the happenings of the last few months, robbing them of half their poignancy.

From now onwards our memories of the igloo winter were much as they are at the present time. The experience was no longer within the sphere of practical politics, and our thoughts and hopes began to centre on the future and what it might bring to each of us.

The next few days, between the Drygalski and the Nordenskjöld Ice Tongues, were uneventful, but our progress varied a good deal because of the presence of bad belts of pressure which sometimes caused relaying, and two whole days were wasted in covering three or four miles of old pack which had been caught up in the lee of the latter tongue.

This pack, indeed, proved to be very difficult and



MOUNT EREBUS.



very trying to the party, both physically and mentally. When we reached the sea ice we had lashed the wooden-runnered sledge on to the iron-runnered one, and thus the "two-decker" was once more doing good service, and we made good progress over open country. This heavy old pack, however, made relaying necessary, and the nature of the work may be gathered from the following extract from my diary :—

"Another day's slogging away over pack. We got through the belt and in view of the Nordenskjöld ice-wall about five this afternoon. Until then we were relaying all the time over pack with pressure-ridges 8 or 9 feet high, and snowbanks up to 4 feet thick. It has been hard work, and especially so for those who have been wheelers, for it has been a case of giving the sledge the best road and of getting along as best we could ourselves. It was a wonder that no legs were broken, for the sledge skidded abominably, but beyond a nasty jar on the kneecap which Dickason received the day was free from casualty. As I have already said, however, we had a strong motive to keep us going, and we pulled equally hard whether up to our ankles or up to our necks in snow. Exaggeration apart, we were frequently floundering for several yards together up to the sockets of our thighs in snow, while the latter was hard and cloggy with a stiff crust, and every step was like drawing a tooth. To add to our difficulties, the light was abominable and snowsquall succeeded snowsquall with slight intervals between. We had lunch in one of these squalls, and the snow melted on everything as fast as it fell, though the sun was only just showing through the haze. The day has been quite sultry, and the snow is wet and sticky. This weather is very enervating, but it is a decided improvement on the cold spring, and we are very thankful for it."

The first sight of the Nordenskjöld Ice Tongue was

a great relief to us, but the sight was all we had for a day or two. Hour after hour we toiled towards the wall, sometimes bringing it nearer apparently, and sometimes seeing it visibly recede into the distance. I know of few things more exasperating than such a mirage as we experienced on these two days.

The face of the ice tongue changed in shape continually, sometimes appearing as jagged cliffs several hundred feet high, sometimes as cliff on cliff piled in the sky, and sometimes disappearing entirely behind the intervening pressure-ridges, which all looked absolutely impassable from a distance, only to dwindle to insignificant belts of low ice when we drew near to them. At the same time the sky to the west and south of us was heaped with pressure-ridges repeated again and again, inverted and reverted, magnified, and changed in proportion, until the floes and bergs looked like grotesque palaces and houses in a city of the sky. I have never before or since seen such a mirage as that we had in view during these hours. We should have appreciated its beauty better, however, if it had left the Nordenskjöld alone, for the dancing evolutions of this cliff were tantalizing in the extreme, and the party's nerves were worn almost to rags as we tramped and tramped away without coming appreciably nearer to the cliff, which might prove to be the last serious obstacle to our homeward progress.

It was in this march across the comparatively open space to the north of the Nordenskjöld that we killed our first seal, and very glad we were to get it. The food was disappearing far more quickly per mile than I had anticipated, and twice I had been obliged to effect a reduction in the ration. Meanwhile sledging hunger was making itself felt, and no one was satisfied by the meals. We were again becoming ravenous, and only the catching of this seal prevented the food question from once more monopolizing our thoughts.



However, steady persistence must annihilate any distance in time, and October 20th found the sea ice left behind us once more and the party camped on the ice tongue. Never were men so glad to leave a landmark behind as we were to get rid of what we had come to describe as "that damned cliff" from in front of us. We were fortunate in striking the only practicable drift for miles along its face, for the cliff elsewhere is 30 to 40 feet high and quite inaccessible. When we arrived at the foot of the snowdrift we first carried up our camp equipment, then looked round for a good site for the camp, hauled up sledges and gear with Alpine rope, and camped. Once we had climbed the ice tongue we picked up two new landmarks—Beaufort Island and Mt. Discovery—both reminiscent of better times, and it was a cheerful party that sat over their hoosh that evening.

One effect of the unexpectedly slow progress we were making was an additional admiration of Professor David and his party. The worst of the present type of sledging was that the sledges came along so reluctantly that it was impossible to pull and think of other things. We had to keep our minds on the drudgery in hand or we slackened our efforts quite unconsciously, and this meant a standing pull to start the sledge again. The farther we went and the harder we had to pull, the more we appreciated the patience of the Professor and his companions, who covered this country at a rate of two or three miles a day only, not, as in our case, at the close of a journey, but at the commencement of a thousand-mile trip. It is almost impossible to realize the patience and self-control necessary for such a feat until one has been in similar circumstances oneself. Our tempers had stood an almost unparalleled strain during the past winter, and stood it successfully; we knew each other more thoroughly than most men ever know their companions, and yet we found it hard to converse with any

freedom on the march during these days. I, for one, certainly found it much safer to confine most of my remarks to the afternoon. This is an axiom which I found has held for most spring sledging journeys I have taken part in. It is far easier to be cheerful after lunch, and conversation in the morning is best confined to such remarks as other members of the party can cordially agree with. Uncomplimentary phrases about the weather, the sledges, and the surface are always welcome, but avoid controversial subjects as you would the devil.

## CHAPTER XXVI

### FROM THE NORDENSKJÖLD TO CAPE EVANS

We make a dépôt of spare gear—Illness reappears with full hooshes—Another seal secured—Tripp Island—A geological reconnaissance—Depôt Island and the Professor's specimens and dépôt—We carry the specimens along with us—Browning's condition critical—We increase his biscuit ration—Granite Harbour—An unexpected find at Cape Roberts—Good news and plenty of biscuits—Griffith Taylor's dépôt—A twenty-hours' rest for refreshments—Heavy pack beyond Cape Roberts—Another dépôt—We increase in size visibly—Browning recovers under the influence of unlimited biscuit—Butter Point—We have to skirt McMurdo Sound—Break-down of sledges—The bad news at Hut Point.

BEFORE leaving our camp on the ice tongue we jettisoned all gear that we could well afford to do without, piling everything in a dépôt and marking the cache with a bamboo in case we should have to return and pick it up, or in case the ship should come near enough to sight it. One of the things we left here was an empty oil-tin. All our sledging oil-tins were enamelled a bright red, and Campbell by scraping out the letters with the point of his knife left a very legible message, the bright metallic lustre of the letters showing up well against the red of the tin. The message was left for the benefit of the commander of the ship, and it ran as follows: "Party left here 21/10/12; all well, making for Cape Evans."

The southern side of the tongue proved to be well drifted up with snow, so that we had a very gradual descent on to the sea ice. The two-decker was then

once again shipped, and we found we made much better progress for a few hours. We soon got into bad pressure, however, and the hard pulling on this and the next day did not agree with our weak stomachs. First Browning had a bad relapse and was obliged to take his weight off the traces, and then Campbell also was affected, and we were compelled to stop early on the second day. Altogether this day was about as unsatisfactory as it could be ; the light was abominable, the surface bad, and a nasty southerly wind added the final touch to our discomfort. We had, however, the satisfaction of seeing our first skua, but with our appetites at this present level we should have been much more pleased if his visit had been a little less hurried. The speed with which he came and went was inconsiderate, to say the least of it.

On the 23rd matters were much more satisfactory, and we made good progress until 4 p.m., when we saw a seal lying on the sea ice near a small bay. We had left Inexpressible Island with enough meat to last us twenty-eight days, and already twenty-three had passed and we were decidedly less than halfway home, though the worst part of our journey was certainly well behind us. The meat that remained also was gradually becoming tainted, for the linen bags were not sufficient protection from the heat of the sun. At first, it is true, they acted very well ; but one or two sunny days had caused the blood to run from the meat and stain the bags a dark red and rusty brown, and from that time of course the effect of the sun on the meat was tenfold. It was quite clear that unless we could get rid of this meat we should very soon have another attack of ptomaine poisoning, and this time such an attack would probably prove fatal.

It can be imagined, therefore, with what pleasure we saw this seal, and, although much before our usual halting-time, camp was pitched at once, and Browning



AN ICE CAVE.



SKI-WAXING SLEDGE-RUNNERS.





and Abbott were dispatched to deal with him. The rest of us soon followed, and the meat, which had been cut into small pieces, was spread out to freeze and afterwards bagged in the meat-bags, the contents of which had first been jettisoned. We then returned to camp and had our first unlimited meal—a glorious hoosh, with seal's liver, kidneys, and brain—but the hoosh was not an unmixed blessing to two at least of the party. Although we had made good progress during the day, the travelling had still been very heavy, for we were yet in an area of pressure ice. We had one capsize and innumerable narrow escapes, for the old sledge rolled as if she were loaded with iron rails. Browning had been slightly better during the day, but Campbell was still very bad, and had been obliged to pull out of harness. It was the standing pulling and heaving that took the life out of the invalids, and the heavy meal at the end of the day was an additional strain. From this time we had meat in plenty, but this increase of ration was counterbalanced in another way by the permanent reduction of the biscuit ration from four to two a day.

The next day numerous seals were seen, and we made another halt in order to obtain a bigger proportion of liver for our hooshes. The reduction in carbohydrates owing to our shortage of biscuits had hit us very hard, and the only way we could hope to make this up was by having a large proportion of liver in our hooshes, since liver itself is stored with the desired food.

Our progress during this day was again fairly good. We must have made some seven or eight miles, and we camped at night opposite to a point we believed to be the northern cape of Tripp Bay. We were not quite sure, for we found it quite difficult to pick up landmarks by the aid of Campbell's small-scale Admiralty chart, which was the only map of the region we possessed, and on which very few points were marked.

On the 25th, after another hard day's work, we camped opposite Tripp Island, at the back of the bay, and next morning I went in on ski to visit it and collect from it. The island was three or four miles inland from the camp, and so it was arranged that I should leave directly after breakfast, and then that the others should pack up and start away towards some islands to the south of us. The exploration of the island took the whole morning, and I rejoined the others some two miles from their morning camp just as they were finishing their lunch.

This was not good going, but now the surface improved rapidly, and the iron runners slid over it at a uniform rate of about two miles an hour. This speed soon devoured the remaining distance between us and two other islands ahead of us, and at 5 p.m. we camped under the shelter of the outermost of the two, which proved to be Dépôt Island, where Professor David had left the specimens collected during the first half of his great journey in 1908.

The *Nimrod* had been unable to reach the island on her northward voyage the next year, and so the specimens still reposed in the cache, and after dinner Campbell and I climbed the island, discovered the dépôt, and transferred the letters and the specimens to our sledge. The former were then put with our private notebooks, and have since been delivered to Mrs. David and to Mawson's brother, to whom they were addressed, while the latter were stowed in the 'tweendecks of our double sledge, and served to weight it effectually and to render capsizing less probable.

After our return from the top of Dépôt Island I walked to the island inshore of it and collected from that, while Campbell and Levick had a prolonged discussion over Browning's condition. The latter had been losing ground steadily, and it now became a doubtful question whether we could take him down to Cape

Evans, or whether it would be better to leave him with Levick at Granite Harbour and hurry over to Cape Evans for medicines and more suitable food. It was decided finally to increase his biscuit ration at the expense of the rest of the party and then to wait and see what effect this had. In future, therefore, Browning was to receive three biscuits a day, and the rest of us on every sixth day went down to one biscuit each.

The next day we cut in towards the land and followed the coast from point to point, finding the surface closer inshore much improved. We must have made some ten or twelve miles this day, and camped in the evening well inside the northern headland of Granite Harbour. At least three miles of the surface we passed over was clear, windswept ice, and for the first time we were able to give Browning a lift on the sledge for an hour or so at a time. Until then he had managed to walk along in his harness and pull now and then, but the pace was too much for him on this day, and we hardly felt the extra weight.

We camped that night in the midst of a rookery of seals, and the youngsters were bleating away all night like lambs. It was very pleasant to hear them in the short waking intervals we had, and needless to say we slept too soundly to be disturbed by anything short of a gunshot.

One curious feature of our day's march was that we passed through a strait of sea ice between Gregory Island and the mainland. In the older maps this island is marked as a point of the mainland, and the difference thus observed is another interesting piece of evidence in favour of the rapid retreat of the shore ice all along the Antarctic coast.

October 28th was the day when our sledging provisions should have given out if we had held to the original ration, and the chocolate and sugar did actually come to an end on this day. Thanks to our economy,

however, we had biscuit enough to last us for another week on our present ration, and of course we were in no way short of meat and blubber. On this day we crossed the mouth of Granite Harbour and camped some three or four miles to the north of Cape Roberts, the low rock promontory which bounds the bay on its southern side. Ross Island was now spread out before us in full view, Mts. Erebus, Terror, and Bird all showing plainly and looking higher than the nearer mountains, although these latter were some 6,000 to 8,000 feet high. On this day the last reference to hunger appears in my diary: "Sledging hunger is making itself felt rather severely, and, though we find we can satisfy ourselves in the morning and evening, we have so little for lunch that the long day is a very hungry one. In the other tent they are all serene, for Browning can take no solid meat food, and the other two have all his as well as their own. Most of our conversations now during spells on the march are divided between the whereabouts of the other party and our chances of having Ross Island to ourselves, and the feeds we are going to have in the near future. It is almost incredible to think that probably we shall be in New Zealand within three months from now."

This was to be the last day we were to feel the pinch of hunger, however, for on the next day as we were approaching Cape Roberts Campbell suddenly sighted a bamboo near a cairn on a prominent rocky point. We at once pulled in to a convenient drift under the island, and while the other four unpacked the sledges Campbell and I walked up to the cairn and found a depôt which proved to contain food in plenty. For the rest I will let my diary speak for itself:—

"Hurrah! Hurrah! Hurrah! Good news and plenty of *biscuits*. We reached Cape Roberts about nine o'clock, and Campbell spotted a long bamboo with the remains of a flag attached. We at once made for

the depôt, and Campbell and I unharnessed and went up for letters. A matchbox attached to the pole contained a note from Taylor to Pennell, written in February 1912. He said in it that, owing to a late season, although they had seen the *Terra Nova*, from July 20th to 27th neither party had been able to reach the other. His party—Debenham, Gran, Ford, and himself—had sledged round here, depôté a couple of cases of biscuits, some odd food, two tins of oil and one of spirit, and their spare personal gear, and then had gone on half-rations over the piedmont to Butter Point.

The following extracts taken from my account of this day's happenings, written in my diary the same night, give some idea of the relief which we felt at the good news about the *Terra Nova* :—

“This is most satisfactory news, for it means that we had had nothing to do with the trouble to the ship, and I think Captain Scott must have reached the Pole, made up the coast to fetch us, and been blown out north by the autumn gales. We shall know more when we reach Cape Evans, but this is enough to set us all smiling at present. I am feeling very lethargic now, for we have had a good feed of biscuits, butter, and sweet, strong cocoa. Butter is a luxury we had never even thought of for sledging. We are twenty-eight miles from Butter Point, and we are going to stay here twenty-four hours and kill a seal for his brain, kidneys, heart, and liver.

“It is good to live for a day like to-day, for we have the best of hope for the safety of a well-found ship like the *Terra Nova*, and our troubles are nearly over. That one sentence ‘explains your absence after the 27th (first seen on the 20th)’ has set our minds at rest.

“I am amused to see that Taylor estimates that the meat of a seal lasts four men for ten meals. At that rate they will be under the impression that we would have



to kill about eighty seals to make them last out for the eight months. They will expect to find the Antarctic depleted either of seals or of the Northern Party."

The day and night of the 29th both merged into one glorious feast, and when we started again on the following morning our mouths were sore from nibbling biscuit, and pretty well three days' full sledging allowance had been accounted for. In fact, I had served out a week's butter, raisins, and lard amongst the six of us, and the only thing we carried away with us externally was a small piece of butter and lard each. We found biscuit and lard was as pleasant as biscuit and butter, and were quite indignant at the thought of the large amount of this useful article which the Western Party had wasted cooking seal meat which might just as well have been fried in blubber.

We made good way on the day we left Cape Roberts until well on into the afternoon, when our route was once more barred by a chaos of pack, which caused several capsizes. This belt was only four or five miles wide, but it reduced our pace so much that we did not leave it behind us until shortly before lunchtime the next morning. We lunched at Dunlop Island, and then started off in fine style over a strait of blue ice between the island and the mainland, and this good surface continued until we camped halfway between Cape Dunlop and Cape Bernacchi.

Since Cape Roberts the shore all along had been fringed with a low 'ice-cliff, generally under 50 feet in height, and we noticed that in many places pieces of sea ice had been hurled right on to the surface of the piedmont glacier, of which this cliff was the seaward face. Here were other testimonies to the fury of the autumn gales, and they increased our belief that the failure of the *Terra Nova* to reach us was probably due to these gales.

Cape Bernacchi was reached on the afternoon of the



1st of November, and here we found another depôt, which contained to our joy a quantity of pemmican, a food which had been absent from the one at Cape Roberts. By this time butter and biscuit had lost their first charm, and here the *chef-d'œuvre* of our evening meal was the raw pemmican, the first we had had since February. Here, again, the only thing we had reason to deplore in the Western Party was their strongly developed taste for cheese and chocolate. They seemed to have cleaned these up everywhere, and we hoped that we should find some at Butter Point, where we were due to arrive next day.

The change to a biscuit diet had had a great effect on all of us, and we were already "swelling visibly"; but of course the man who benefited most by the change of diet was Browning. There is little doubt that the depôt at Cape Roberts had saved his life. He was becoming rapidly stronger and was already able to put some weight on to his trace, a fact which in itself did much to improve his spirits; for the fact that he had been unable to do his share of work had preyed on his mind a good deal. If ever men had reason to be grateful for food, we had for these depôts, and the members of the Western Party must have slept easily that night and have felt pleased with themselves all day if there is anything in telepathy.

What with the specimens I had collected as we touched point after point on our way down the coast and the extra food we kept piling on our sledge, our load had reached large dimensions by the time we pulled into Butter Point on December 2nd; and here we saw a huge stack of cases which must have contained provisions enough to keep us all going for months. The miscellaneous heap of cases contained amongst other things oatmeal, biscuits, butter, lard, sugar, chocolate, bacon and hams, jam, tea, candles, Homelight lamp-oil, and a dozen other things, evidently preparations hastily

made by the ship for a wintering party. Crowning all was a large bamboo with a tin lashed to it and a note from Atkinson inside the tin, dated April 12, 1912. This gave us food for thought indeed, for it was now certain that we were not alone down here, and we could think of no adequate reason for Atkinson risking a journey over here as late in the year as this without some very strong reason. Our minds were filled with fears of we knew not what, and Campbell determined to strike straight across the sea for Cape Evans.

Before we had sledged two miles, however, camping-time approached, and we decided to reserve the dash till to-morrow. That night we added to our fresh experiences the taste of jam, raisins, and figs, and a tot of medicine brandy was served out to each man in anticipation that this would be our last night out.

We had reckoned without our host, however, and next day we had only made five or six miles before we got into a confused belt of pressure, seamed with leads of black ice which was obviously new, and when we had succeeded in passing this we were stopped by the unsafe ice of a lead which stretched as far north and south as we could see. Just before we reached the lead our overloaded sledge broke down altogether, all the lashings of the upright struts in one runner drawing at once and letting the sledge over on its side. We then unpacked the gear and made a depôt of a good deal of the heavier stuff, and with the single light sledge endeavoured to make our way across the lead of black ice. This proved unsafe, however, and we were obliged to retrace our steps, pick up our depôt, and make back towards the Stranded Moraines, within three miles of which we camped for the night.

The next day Campbell took Levick and Dickason and made his way back to Butter Point for a further supply of food, and I took the other two men and returned to the scene of the wreck for the iron runners.

After three or four hours' hard work we succeeded in fixing these on the other sledge, and returned to camp in the evening in time to prepare the hoosh before the others arrived. They brought with them an adequate supply of food for the circumnavigation of the sound, and accordingly on the 4th we started on our way south. About nine on this same morning we observed three black objects marching towards us. There was a pronounced mirage at the time, so that we were not sure whether they were men or penguins, but we decided that they looked too tall for the latter. Campbell and I therefore went towards them, and suddenly Campbell, looking through his glasses, said, "I believe they're semaphoring us, Priestley; just return their signals." I accordingly semaphored for all I was worth, but we got no definite answer from them, and a few minutes later we saw the sheen of their white breasts as they turned towards us, and there was no longer any room to doubt what they were.

This was not the first time that Emperor penguins had deceived us, but never so thoroughly as on this occasion.

We kept close to the new ice as we journeyed south, hoping always to find it peter out, but it persisted right to the back of the sound, and we were obliged to climb up on the old sea ice that is mapped as the seaward end of the Barrier before we could walk round the lead. We then crossed an angle of this old ice from west to east, and descended on to some one-year-old ice between it and Hut Point, making our way over this as far as the pinnacled ice, which we crossed easily at its eastern end. We then found ourselves on the northern tongue of the true Barrier, and that night, or rather early the next morning—for we marched till well past midnight—we camped within seven miles of Hut Point.

It is worth noting here that the change in our diet had had a most remarkable effect on our mouths, which were terribly sore. This, I suppose, was due to the

biscuit-eating, and it was certainly very uncomfortable. In my own case the sides of my mouth were covered with sores and blood blisters, and my palate, tongue, and the roof of my mouth were sore and chipped. My mouth was so swollen and my tongue so large that I could not eat without chewing portions of both, and my speech was rendered so indistinct that Campbell could not hear my remarks on the march until they were repeated three or four times, though, as he said, after nine months without a wash, our ears might have been at fault too.

After a short sleep we now set out on our way across the seven miles of sea ice intervening between us and Hut Point. We were within a mile of our destination when one of the big sastrugi over which we were marching capsized the sledge, and when we had righted it we found that it had suffered in precisely the same way as the first. It was impossible to mend the sledge with the means at our disposal, and so we camped at once, and Campbell, Dickason, and I walked into Hut Point for news.

As we approached the Point we saw numerous tracks of dogs and men, and of what we took to be ponies, and this struck us at once as a very ominous thing, for had all been well it was unlikely that a party would be out on the Barrier. Our fears, too, were soon confirmed. The hut was deserted, but a letter we found written by Atkinson and addressed to the commander of the relief ship put the matter beyond doubt. There was no direct reference to the missing party, and we were not at all clear how many had gone. All we could gather—and a great deal of that from inference only—was the safety of Atkinson, Nelson, Cherry-Garrard, and Debenham, and their presence down here. We feared that we had lost eight men—the fact that Atkinson was in command vouched for the loss of more than one unit of four men—and it did not strike us that Captain Scott might have taken five.

Debenham was left in charge at Cape Evans, and a



THE NORTHERN PARTY ARRIVE AT CAPE EVANS.





party of eight men with seven mules and three men with two teams of dogs were on their way to search for the bodies. As we were not in a condition to catch up this search party Campbell decided to continue our way to Cape Evans. We therefore returned to our camp and spent the night there, and then made for the main winter quarters, arriving there early in the afternoon.

## CHAPTER XXVII

### SUMMER ON ROSS ISLAND

Our arrival at Cape Evans—Debenham and Mr. Archer at the hut—A few days' rest—The return of the search party—Their news—We leave for Cape Royds—An ascent of Mt. Erebus—We take the sledge up 9,500 feet—Four men reach the summit of the volcano—An eruption—Glissading down—The *Terra Nova* arrives and we return to New Zealand.

WE were surprised to find no one at the hut at all when we arrived, but Debenham and Mr. Archer soon returned from a short photographic trip they had taken down the coast. They were both astonished and overjoyed to see us, for, owing to the open season, they had several weeks ago given up all hope of seeing us this summer, and, indeed, many of the party who had wintered here were of opinion that our names must be added to the list of those who had perished. We were able to obtain from Debenham the names of the missing men, and our sorrow was sensibly relieved when we found that only five men composed the ill-fated Southern Party. The party who were away in search of the bodies were Atkinson, Wright, Cherry-Garrard, Nelson, Gran, Crean, Hooper, Williamson, Keohane, and Dmitri, and the rest of the officers and men had returned to New Zealand in the ship which had been prevented by heavy pack and heavy weather from reaching us. The note we had found at Butter Point had been written when Atkinson had taken a party in search of us late in April, and had found that open





THE SUMMIT OF DMITRI PEAK.



COOKING WITH A PRIMUS ON A SLEDGE TRIP.

water barred his passage to the northward. He had then returned safely to Cape Evans, and had spent the winter there.

The next few days were spent by the Northern Party resting and feeding. We managed to avoid any trouble from overeating by having an infinite number of small meals with very small intervals between instead of three or four big ones, while each man when he retired to bed took with him some delicacy, such as a box of fancy biscuits or a bag of dates or raisins, in case he should wake up hungry in the night. When we had arrived we were entirely free from fat, and, indeed, were so lean that our legs and arms were corrugated rather than rounded, but this soon changed. We weighed soon after our arrival at the hut and found ourselves much below normal, and weighed again a few days afterwards, finding ourselves much above normal. In my own case I went up from well under 10 st. to 12 st. 5 lb. in six days, and I should think this was nearly a record for speedy filling out. We found, too, that we were not so fit as we had thought, for several members of the party discovered symptoms of oedema, the flesh of their legs remaining sunken when it had been pressed in with the finger. Such a loss of elasticity in the flesh is a marked symptom of scurvy, but we had been living on fresh meat all the time, and it seems probable that in this case it was due to general debility, brought on by prolonged overwork and overstrain.

Campbell took advantage of these weeks of rest to rewrite his diary, and I typed mine on Cherry-Garrard's typewriter, while Levick developed the photographs we had taken the preceding summer. We were agreeably surprised to find that these latter turned out very well, in spite of the long period which had intervened between exposure and development. These good results can only be ascribed to the fact that both films and plates

remained frozen for practically the whole time, so that chemical reaction was retarded so much as to become inadequate to produce any perceptible result.

The day after we settled down in the hut Levick left with Abbott and Dickason to bring in some things that we had depôté near our foundered sledge. They were away for the best part of three days, but had no adventures worth recording.

After a fortnight's rest we again prepared to trek. This time I was to lead a party up Erebus in an attempt to survey the old crater and climb to the summit. It was originally intended that the party should consist of three men—Debenham, Dickason, and myself ; but before we could get away the search party returned, and our party was afterwards increased to six, Gran, Abbott, and Hooper making up the number.

The search party had been unexpectedly successful in their sad mission, and had come across the bodies of Captain Scott, Dr. Wilson, and Lieutenant Bowers in their tent 160 miles south of Hut Point. They had secured the records and specimens of the party and much of their equipment, and had buried the bodies beneath a huge cairn of snow, read the Burial Service over them, and had then left them to the peace they had so hardly won. The story of the glorious record left by the Southern Party has been told at length in the official history of "Scott's Last Expedition," so I will only quote, for the benefit of any readers who may not have read that book, the passage from my diary which describes the news brought in by the search party :—

"In the evening Atkinson, Cherry-Garrard, and Dmitri arrived with their dog-teams. They brought news that the mule party were on their way. They had the best news that could be hoped for under the circumstances, and we have now ample proofs of the glorious way in which the Southern Party died. About







THE OLD CRATER OF EREBUS.



CAMP NEAR THE OLD CRATER.

eleven miles south of One Ton Depôt they found the tent still standing, with the bodies of our leader, Wilson, and Bowers lying in their bags.

"They had died of general weakness and starvation, having been laid up during a nine days' blizzard, with nothing to eat and no oil. They had clung to their specimens, and had quite a large collection on the sledge, while they had dropped their photographs only a few miles back. From Captain Scott's diary, it appears that they found Amundsen's tracks at  $88^{\circ}$  S., and had followed them to the Pole, which Amundsen had reached on December 17th, or a month before our men. On the way back they had had quite decent weather and good surface on the plateau, but had not made good progress down the glacier, mainly owing to Evans failing. Near the foot of the glacier the latter fell and sustained concussion of the brain, and he never recovered. He died just as they reached the depôt at the bottom of the glacier.

"From the time they reached the Barrier the situation became worse and worse. The surface was vile, the temperature  $30^{\circ}$  to  $40^{\circ}$  below zero, and the weather overcast. They were making only a few miles a day, and picked up their depôts at  $81^{\circ} 30'$  S. and  $80^{\circ} 30'$  S. latitude with increasing difficulty. They had all been badly frost-bitten, and Oates, whose feet were beginning to mortify, now began to feel that he was a drag on the party. A few miles south of One Ton Depôt a blizzard came on, and after discussing the position with the others, Oates evidently made up his mind that he must be sacrificed for the rest of the party. He told the others that he must leave the tent and might be some time away, and then he walked away into the drift and was never seen again. The others struggled on, getting weaker and weaker, until they were held up by this last blizzard, which lasted for nine days and finished them. Atkinson says that even if they reached

the depôt they could not have got in. There is this one crumb of comfort about the manner of their end : I am certain they would themselves have preferred the more lingering death, with the chance of their records and specimens being discovered, to the swifter and more merciful fall down a crevasse and the certain loss of the results of their journey."

The evening of the return of the search party was spent by them and by ourselves in an interchange of experiences, which lasted far into the night ; and the Erebus trip was put off for one or two days in order to enable us to see something of them and to enable Gran and Hooper to prepare for the journey.

On the 2nd of December, however, we pulled over to Cape Royds, and from there prepared for our assault on the mountain. Our provisions were intended to last a fortnight, and the trip did take just that time. With the exception of two days' delay, at about 5,000 feet above sea-level, in order to permit some low-level clouds to clear away from beneath us, our progress upwards was steady. We examined the nunatak we named Dmitri Peak, on the way to the old crater, and camped in the latter on the 8th. Here we spent a couple of days, and then, leaving Debenham and Dickason to complete the survey of this district, the remaining four of us made up a camping equipment for one unit and provisions for five days into four packs, and started on the steepish climb to the second crater. By dint of keeping as much as possible to the rocky ribs of the mountain we managed to climb without much difficulty, and arrived in the second crater at 11,500 feet in three hours. We made camp here, and further exploration was delayed for twenty-four hours by a cold southerly wind carrying drift. It was an interesting feature of the journey that while the temperature at sea-level during this time remained consistently above 20° F., our temperatures at this camp



THE HIGHEST CAMP IN ANTARCTICA.



HOOVER WITH HIS PACK.

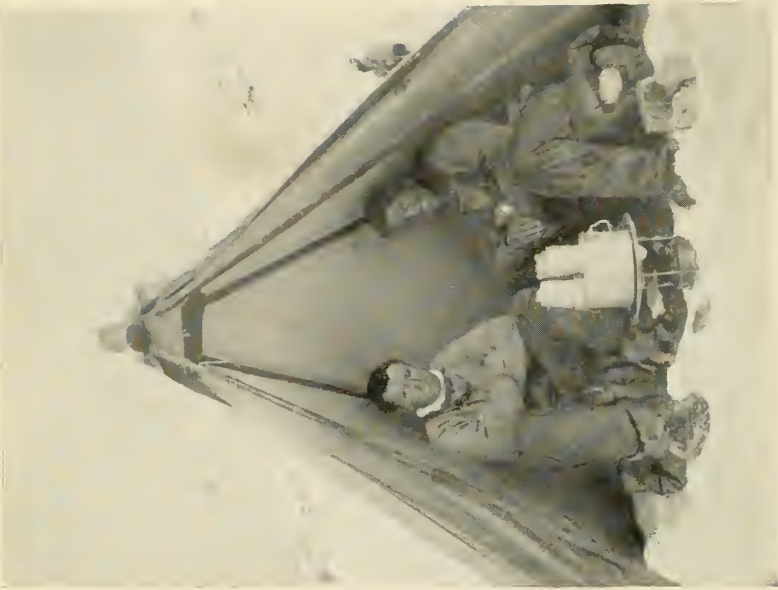








THE ENTRANCE TO THE SECOND CRATER OF  
MOUNT EREBUS,



A SKELETON COOKING EQUIPMENT FOR  
MOUNTAIN CLIMBING.

ranged between  $-15^{\circ}\text{F.}$  and  $-36^{\circ}\text{F.}$  ; in other words, we experienced as much as  $68^{\circ}$  of frost in the middle of summer—a slightly lower temperature than Professor David recorded here in the autumn.

At 1 a.m. on the 12th of December (12/12/12) I was awakened by Gran, who said that the weather was clear, and a glance through the tent door confirmed the report. Obviously, if the mountain were to be climbed, now was the time to do it. There was not a cloud in the sky, and a most beautiful plume of steam testified to the activity of the volcano. Indeed, during the night we had all been awakened by the noise of a true eruption. The air was so rarefied at this height that we were compelled to proceed with caution and halt every few yards, in order not to put too much strain on our lungs and hearts ; but surely, if slowly, the two or three miles which separated us from the active cone were traversed, and six o'clock saw us on the top of the mountain, 13,000 feet above the sea. An attempt to find the height actually by means of a hydrometer failed, for the instrument would not work, the wind being too strong and shelter too meagre to enable us to light the spirit-lamp, which should have boiled the water. After a few photographs had been taken and the record had been placed in position, we prepared to return, and my decision was hurried by a complaint from Hooper that he could not feel his feet. This meant frost-bite, and as I wished to collect on my way back to camp I sent Abbott home with the injured man, while Gran and I returned in a more leisurely manner.

We had descended some 500 feet when I had occasion to change the film in my camera, and I discovered to my annoyance that I still had the record with me, and that the film-tin left in the cairn on the summit of the mountain contained an exposed roll of films. This had to be changed, and Gran volunteered to return with it.

He had just reached the cairn and substituted the true record for the film when an eruption occurred. There was a great ebullition of steam and the roar of an explosion, while huge blocks of pumice were hurled into the air, most of them falling back into the crater, but some around him. He crouched close to the ground, however, to avoid the noxious fumes and escaped absolutely unhurt, though feeling rather sick. When I reached the top of the mountain again, having run all the way in short stages, he appeared from the middle of the steam cloud, looking very cheerful, and very full of the phenomena which had accompanied the eruption.

After this little adventure we returned slowly to the tent, collecting as we went, and when there lay down for a few hours, afterwards breaking camp and packing our gear down the mountain-side. The return to our low-level camp was much quicker than the ascent, for instead of avoiding the snow-slopes we sought them out, threw ourselves down on them, and let ourselves slide, controlling the speed of descent by means of our ice-axes.

The only untoward feature of our return journey to Cape Royds was the slight illness of Gran, which was undoubtedly due to the sulphurous nature of the fumes given off during the eruption.

We called at the parasitic cone, which we afterwards named Mt. Hooper, on our way down and examined it carefully ; but in spite of this delay and a short halt due to a blizzard, we made such good progress that we arrived at Shackleton's old winter quarters on December 15th. Campbell was over here completing a survey of the cape, and I made my report to him, and then accompanied him back to Cape Evans for a few days.

The rest of December was spent by Debenham, Williamson, Dickason, and myself making a survey of





THE SUMMIT OF THE VOLCANO.



AN ERUPTION OF EREBUS.







Debenham.  
Williamson.

Dickason.

Priestley.

CHRISTMAS AT SHACKLETON'S HUT.

the Cape Royds district, and we spent Christmas and the New Year at Shackleton's hut.

On January 2nd we returned to Cape Evans, and there we waited for the ship with the rest of the party, filling in our time by flensing skins for the zoological collection, drawing our charts, collecting and labelling geological specimens, etc. On the 18th the *Terra Nova* appeared, and we passed on our sad news to the officers and crew ; and, after a few hours' hard work embarking stores and personal gear, we left Cape Evans, never to return. On our way north we called at Cape Royds, Granite Harbour, and the Hell's Gate Moraine for depôts of geological specimens, and at the latter place a large depôt was left at Campbell's suggestion. The ship's head was then turned north, and after a short and uneventful journey New Zealand was sighted early in February. The first port we made for was Akaroa, and we stood off and on until the fateful cable had been dispatched which was to spread the news of the expedition's success and its heavy loss all over the world. The following day we landed at Lyttelton, the New Zealand headquarters of the expedition, and with this landing the history of the Northern Party, as of the rest of the expedition, finishes.

It is a story which has many points of unusual interest, and we claim that we have justified our existence, even if only by proving that a party cut off from its base, with practically no resources beyond what are grudgingly provided by the country, can exist, if not in comfort, at any rate in comparative safety. The winter of 1912 has undoubtedly left its mark on all of us, and none of us would care to repeat the experience ; but in my own case, and, I believe, also in that of the other members of the party, the "Call of the South" remains a force to be reckoned with, and a force which is probably rather increased than

decreased by the hardships through which we have passed. Those very discomforts and privations have only served to convert otherwise commonplace comforts into exquisite pleasures, and privations have been glossed over and pleasures enhanced by a very perfect comradeship. After we had rejoined our friends at Cape Evans, and later on the *Terra Nova*, the relations between members of the party became a standing jest to the other members of the expedition. The Northern Party were "as thick as thieves"; and well they might be, for if ever men knew each other inside and out, it was the six of us who had dwelt together for seven months literally "in a hole in the snow."







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